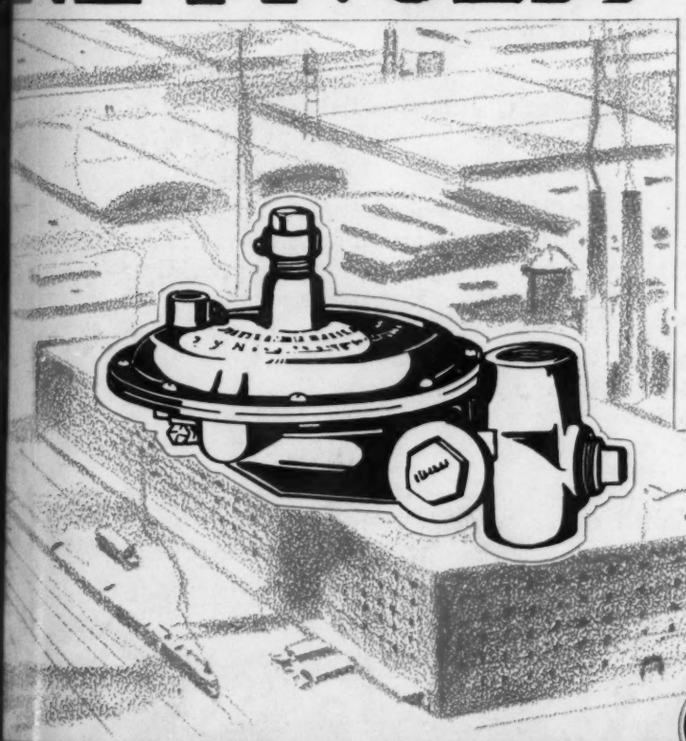
GAS

ENGINEERING • UTILIZATION • LOAD-BUILDING • MANAGEMENT

REYNOLDS *the standard of* COMPARISON!

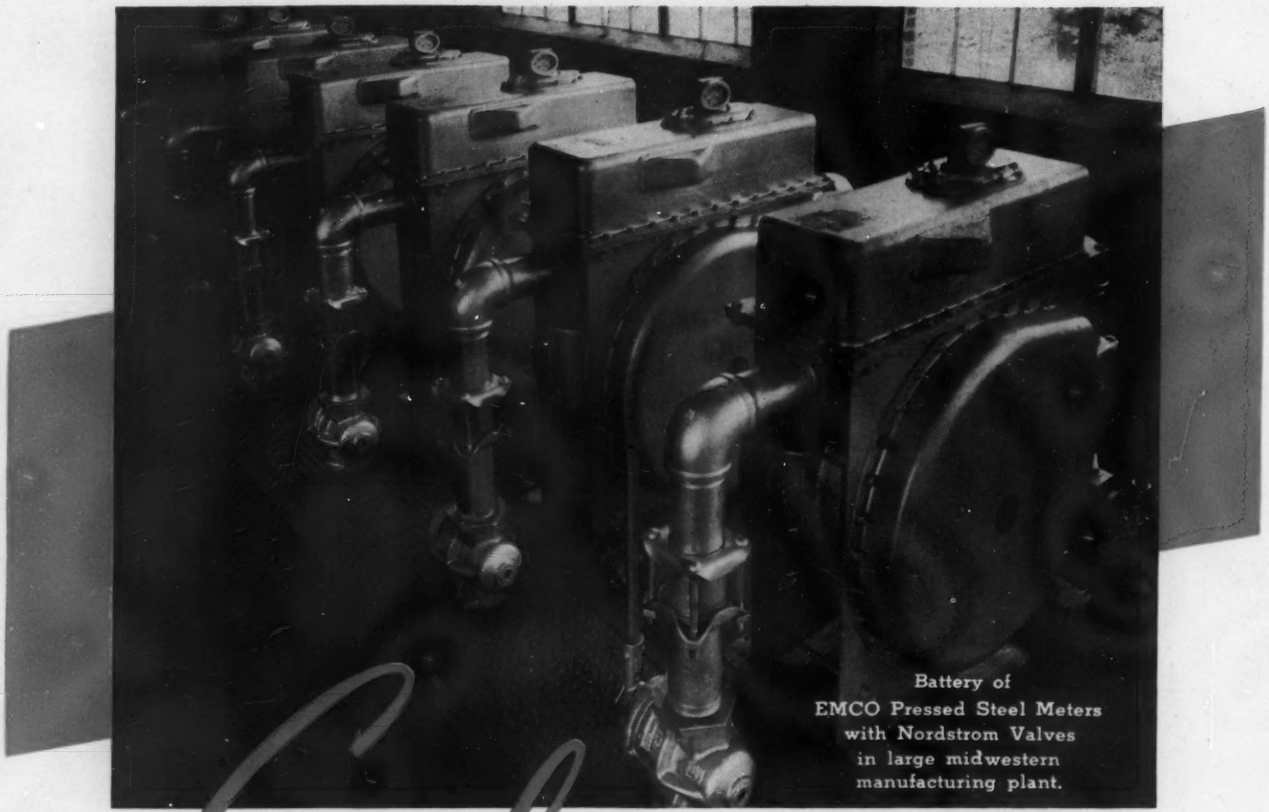


Ever since the beginning of industry among the nations of the world, there have been names that secure instant recognition — names that instantly suggest the highest quality. In the Gas Control Field for nearly half a century, the name REYNOLDS has been the standard of comparison — so recognized by leading gas company Executives and Engineers, as well as Plant Superintendents and Distribution Experts. REYNOLDS offers to the gas industry complete cooperation in solving Gas Control problems. Write!

REYNOLDS GAS REGULATOR CO.
Anderson, Indiana — U. S. A.

RECOGNIZED GAS CONTROL SINCE 1892

FEBRUARY 1939 ◆◆ 25 CENTS



Battery of
EMCO Pressed Steel Meters
with Nordstrom Valves
in large midwestern
manufacturing plant.

A *Good* REASON WHY GAS IS INDUSTRY'S FINEST FUEL . . .

THE EMCO PRESSED STEEL METER

Of industry's most widely used types of fuel, gas is the only one that is paid for *after* use at definite accounting periods.

From this point of view, EMCO Pressed Steel Meters have made a definite contribution to the increasing use of gas by providing a means for reliable, accurate measurement of large volumes. While they are giants in capacity, they require less floor space per cubic foot than any other meter. Their exclusive reinforced, pressed steel construction makes them extremely rugged and light in weight.

Because EMCO Pressed Steel Meters fulfill every requirement for large volume industrial applications, they help sell gas to industry and build larger loads.

PITTSBURGH EQUITABLE METER COMPANY

MERCO NORDSTROM VALVE CO.

NEW YORK · BUFFALO · PHILADELPHIA
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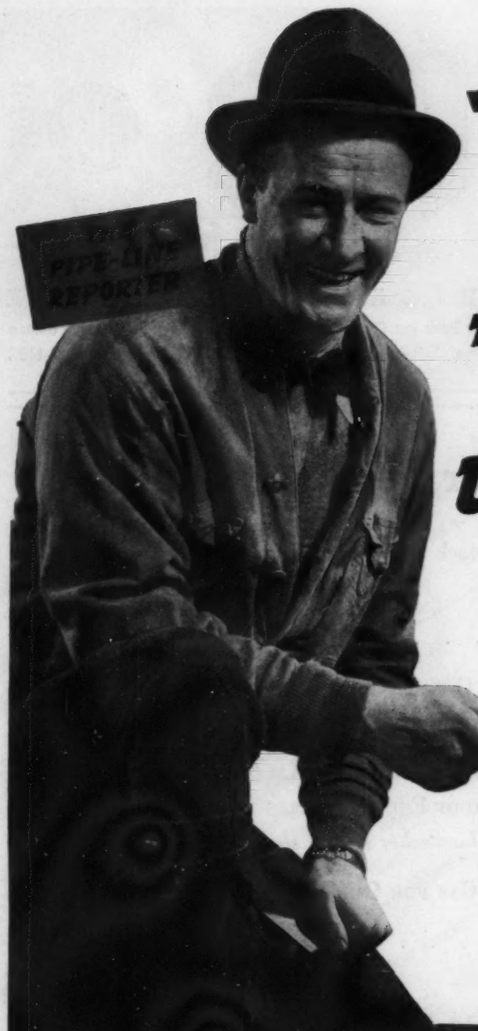
Main Offices - PITTSBURGH, PA.

DES MOINES · CHICAGO · COLUMBIA
MEMPHIS · OAKLAND · HOUSTON



"WHEN THEY LOWER THIS LINE, NO HARMFUL STRESSES WILL OCCUR – IT'S DRESSER-COUPLED!"

Every one knows the advantages of assembly *above* the ditch: narrow trench, elimination of bell holes, faster jointing, etc. BUT . . . to use rigid, non-flexible construction above ground, and then crowd the line into the ditch, is to set up dangerous stresses. The *safe*, practical way is to use Dressers. They're *flexible!*

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MFG. COMPANY, BRADFORD, PA.

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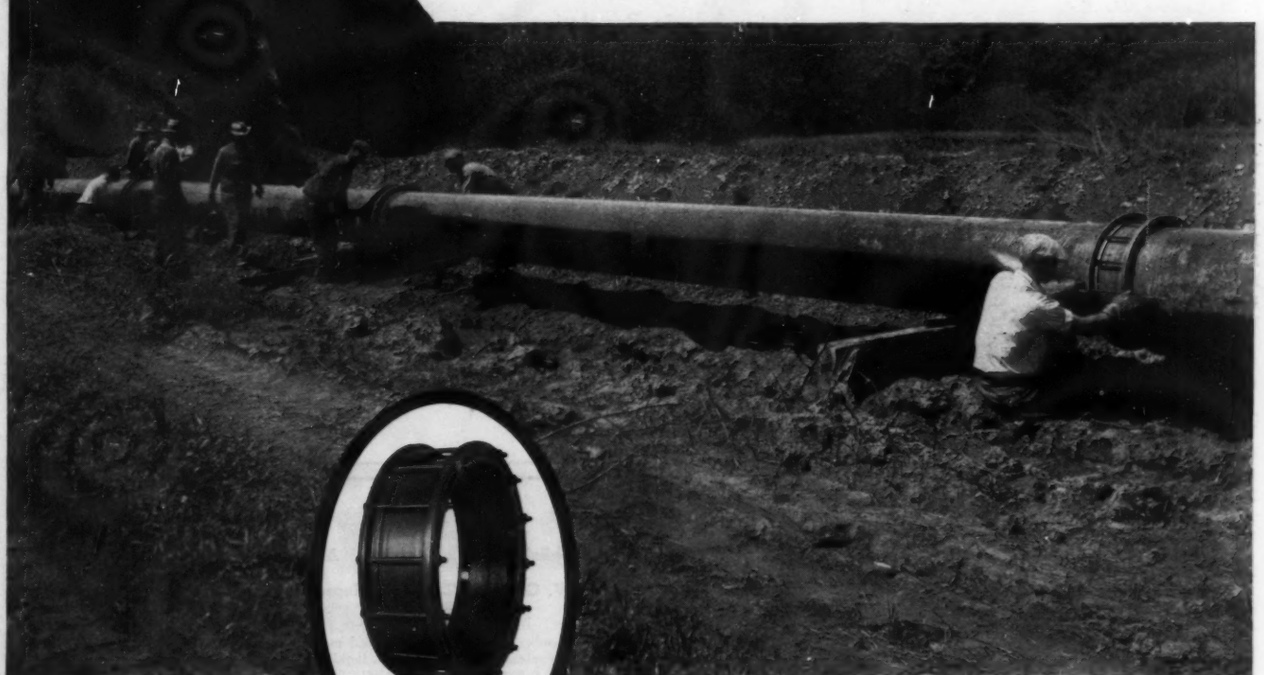

24" O.D. Style 38
Steel Coupling

NOTE TO READER: This is the sixteenth in a series of advertisements dramatizing one engineer's experience with his first Dresser-coupled line. For the complete story, write for Bulletin 351.

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GAS

Fifteenth Year of Publication

LOS ANGELES 810 South Spring Street Phone MIchigan 1481

CHICAGO 1064 Peoples Gas Bldg. Phone HARrison 8536

NEW YORK 489 Fifth Avenue Phone Vanderbilt 3-4192

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CRAIG ESPY, Assistant Publisher — **ARTHUR ROHMAN, Managing Editor**

W. G. RUSSELL, Field Representative

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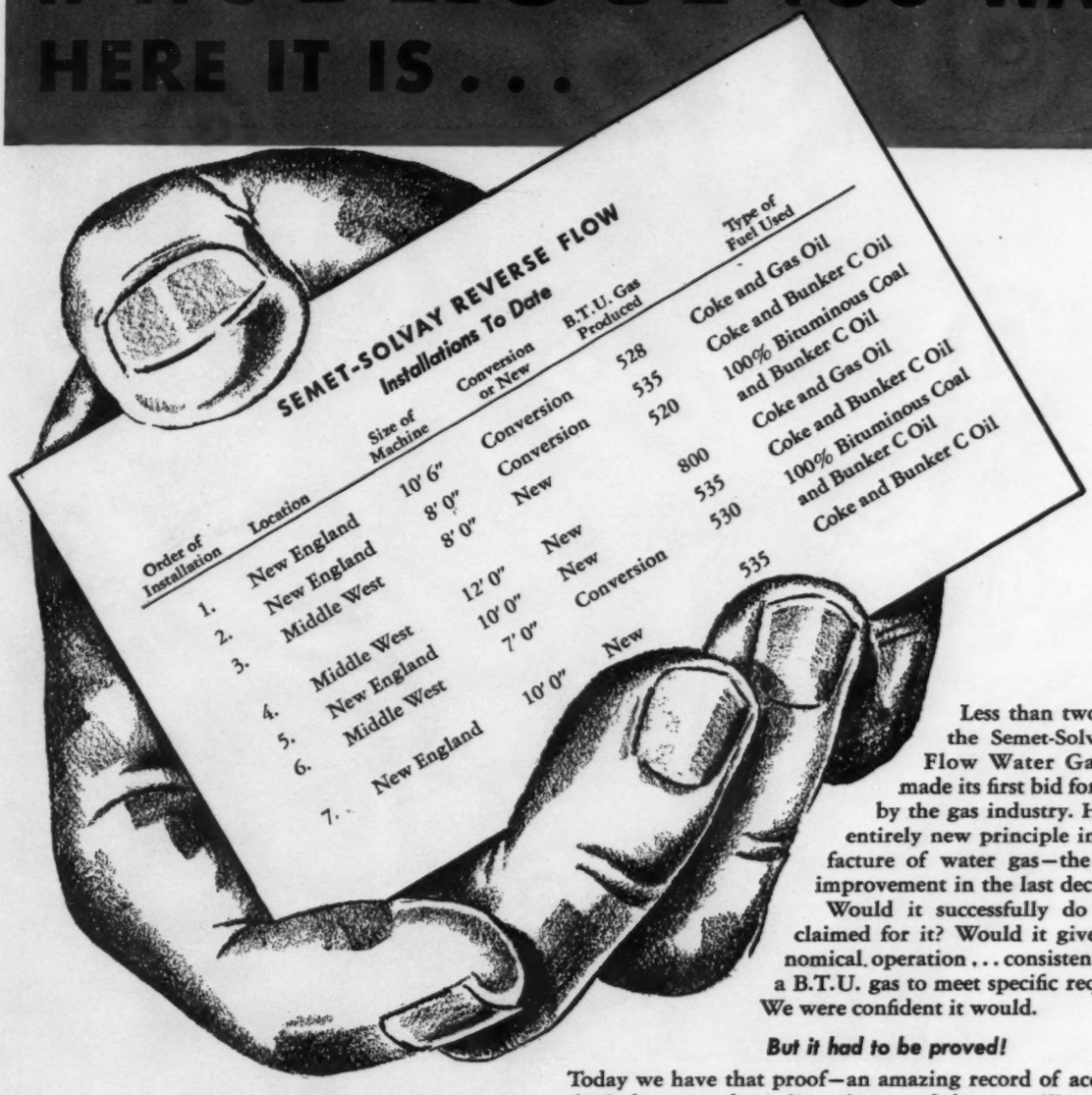
Publishers: OIL & GAS *Equipment Review;* HANDBOOK BUTANE-PROPANE GASES.

IF IT'S PROOF YOU WANT HERE IT IS . . .


SEMET-SOLVAY REVERSE FLOW
Installations To Date
Order of Installation
Location
Size of Machine
Conversion or New
B.T.U. Gas Produced
Type of Fuel Used
1. New England 10' 6" Conversion 528 Coke and Gas Oil
2. New England 8' 0" Conversion 535 Coke and Bunker C Oil
3. Middle West 8' 0" New 520 100% Bituminous Coal and Bunker C Oil
4. Middle West 12' 0" New 800 Coke and Gas Oil
5. New England 10' 0" New 535 Coke and Bunker C Oil
6. Middle West 7' 0" Conversion 530 100% Bituminous Coal and Bunker C Oil
7. New England 10' 0" New 535 Coke and Bunker C Oil

Less than two years ago, the Semet-Solvay Reverse Flow Water Gas Machine made its first bid for acceptance by the gas industry. Here was an entirely new principle in the manufacture of water gas—the first *major* improvement in the last decade.

Would it successfully do everything claimed for it? Would it give more economical operation . . . consistently produce a B.T.U. gas to meet specific requirements? We were confident it would.

But it had to be proved!

Today we have that proof—an amazing record of acceptance by the industry, and ample testimony of the versatility and adaptability of the Reverse Flow Water Gas Machine . . . Four new, and three converted machines, sizes from 7′ to 12′, operating with either Gas or Bunker C Oil, and in each case producing *uniform* gas of required specification—even up to 800 B.T.U.!

If you are considering the modernization of present gas equipment, you will be interested in knowing the results you can expect by adapting Reverse Flow to meet your requirements.

SEMET-SOLVAY
ENGINEERING CORPORATION

Engineers ***Contractors***

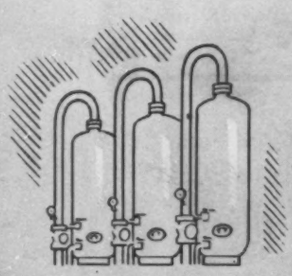
40 RECTOR ST. NEW YORK, N. Y.

NOW GAS IS DOING OUR

"Four big jobs" TOO!

CLEAN GAS MAKES SATISFIED CUSTOMERS

That's how customer satisfaction grows ! First she used gas for cooking; then—in order—for refrigeration, automatic water heating and house heating. But if the gas had failed her, do you think she would have extended its use? On the basis of increased consumer satisfaction alone, you are warranted in installing Blaw-Knox Gas Cleaners. In addition to insured continuity of service they give you many values . . . protection of compressors from the erosive effects of scale and sand; increased accuracy in metering; prevention of damage by dirt and rust. Blaw-Knox catalog No. 1581 tells the whole story. Ask for it.

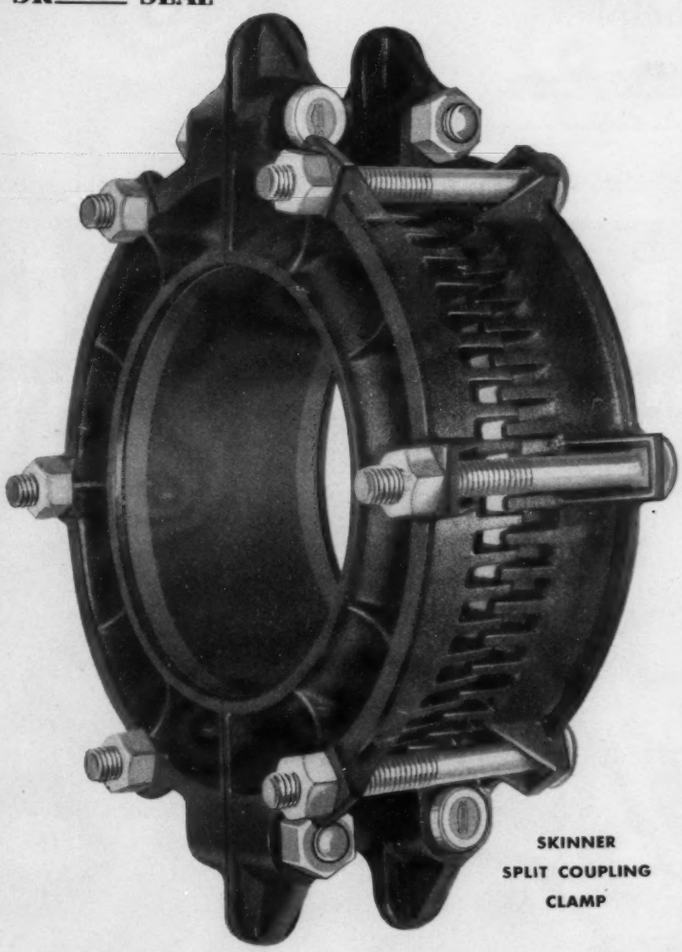


BLAW-KNOX
GAS CLEANERS

BLAW-KNOX DIVISION of Blaw-Knox Company · FARMERS BANK BLDG. · PITTSBURGH, PA.

FREEZING WEATHER AHEAD!

SKINNER-SEAL

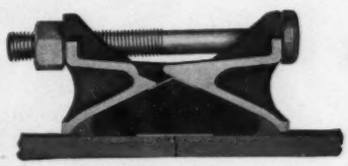


SKINNER
SPLIT COUPLING
CLAMP

GET READY NOW FOR BROKEN MAINS!

Remember that one man can permanently splice a broken main, with a Skinner Split Coupling Clamp, in fifteen minutes. Contrast this with two or three men toiling away for three to six hours to put on an old-fashioned sleeve.

For repairing a clean break in a cast iron main, no other method can compare with the installation of a Skinner Split Coupling Clamp. Not only repairs the break instantly — but also introduces an element of flexibility at that point which prevents future trouble. Self-adjusting for variations in pipe diameter. Standard equipment with most gas and water companies.



Width of gasket, 5¼ inches

GET COMPLETE CATALOG

M. B. SKINNER CO. *Est. 1898* **SOUTH BEND, IND.**

TALK about thrifty investments! Cast iron pipe, bought and laid by the first gas company to receive a franchise in this country, is still in service. Today's investments in mechanical joint cast iron pipe buy the same long life plus a joint that is bottle-tight under modern operating conditions. Mechanical joints, made by C.I.P.R.A. members, vary in design but are identical in principle.

Look for the "Q-Check" registered trade mark. Cast iron pipe is made in diameters from 1¼ to 84 inches.

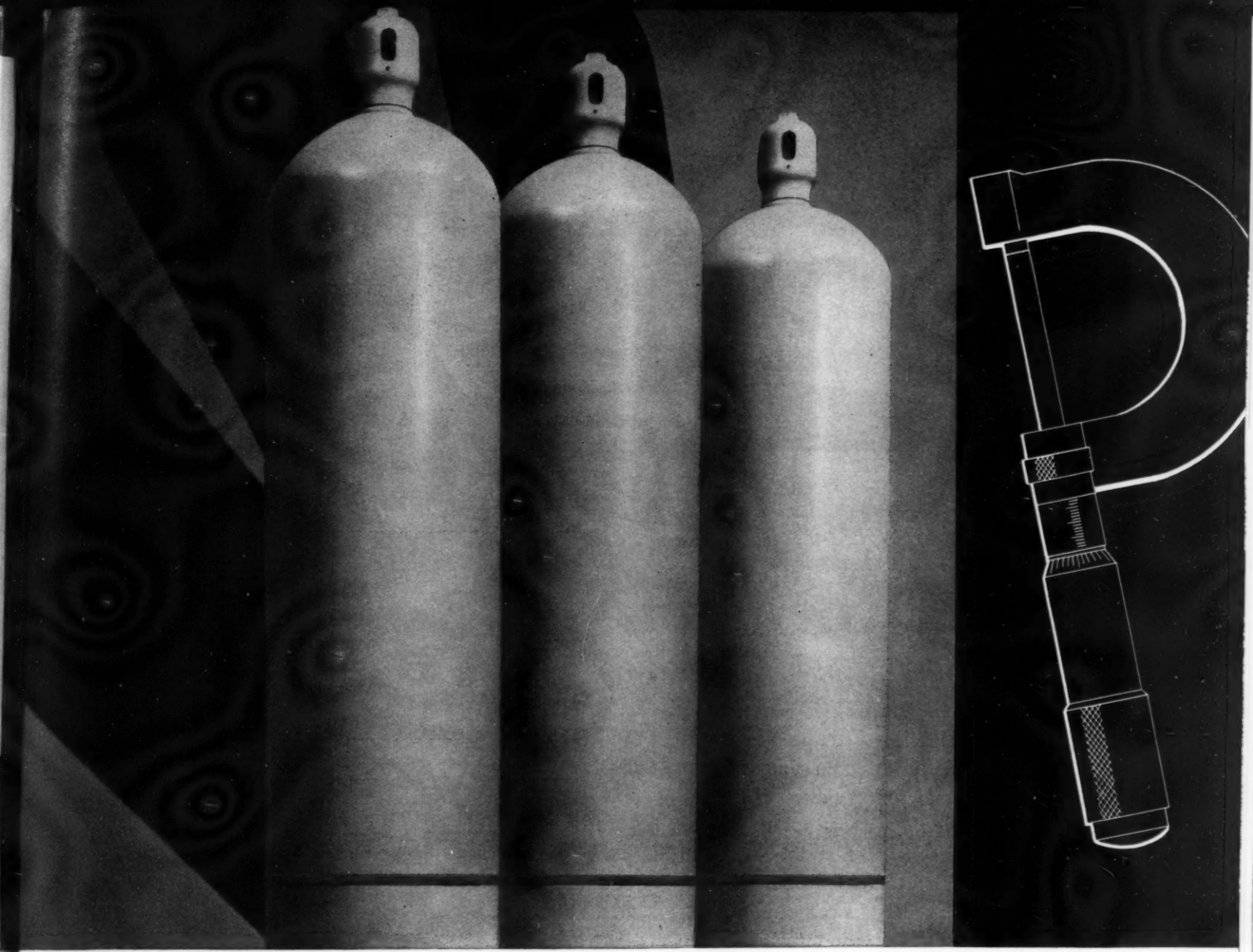
THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER, 1013 PEOPLES GAS BUILDING, CHICAGO, ILLINOIS

CAST IRON PIPE

THE STANDARD MATERIAL FOR UNDERGROUND MAINS

Easy does it! Slip the follower-ring and gasket over the spigot end—tighten the bolts—and your bottle-tight mechanical joint is assembled.

105 years ago a 10-inch cast iron gas main was laid in Baltimore. Above, you see it as good as new when recently uncovered for inspection.



Precision manufactured for dependability

● Your requirement for absolute dependability is easily met by Hackney cylinders. Exceptionally high standards of precision manufacturing have been maintained by the Pressed Steel Tank Company for over thirty-five years.

Uniform strength, weight and capacity are assured. Accurate control of heat-treating processes and constant supervision and inspection of every manufacturing operation are maintained from start to finish.

Hackney containers have won a decided preference in many industries because of their scientific design and outstanding performance records.

There is a standard Hackney container for virtually every need. Let Hackney engineers help you determine the most practical and economical container for your individual requirements—or assist in the development of special cylinders or shapes, if necessary.

Write for details—there is no obligation.

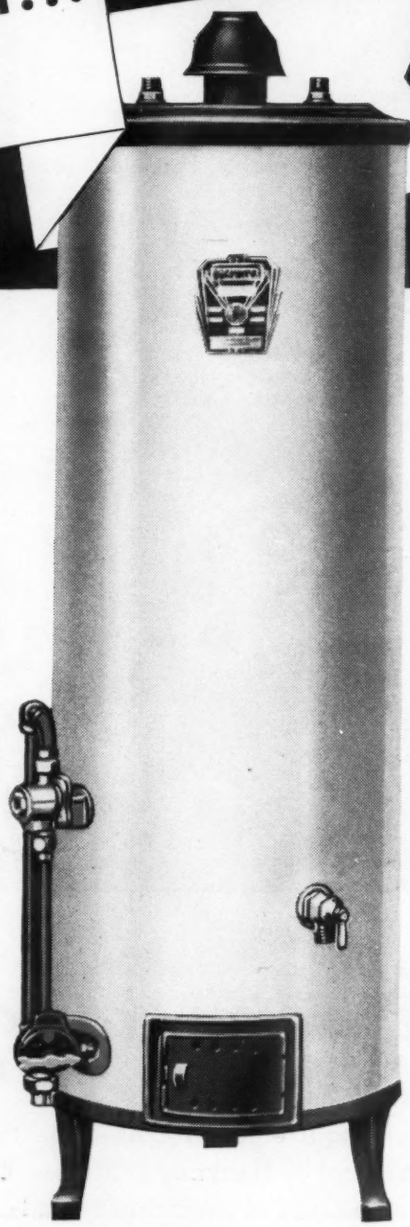
Hackney
MILWAUKEE

PRESSED STEEL TANK COMPANY

208 S. La Salle St., Room 1185, Chicago; 1363 Vanderbilt Concourse Bldg., New York; 1463 S. 66th St., Milwaukee Wis.; 666 Roosevelt Bldg., Los Angeles, Calif.

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

Steadier gas consumption . . .
Fewer service calls . . .



if the Heater Tank is

EVERDUR METAL

(Anaconda's copper-silicon alloy)

WATER HEATERS equipped with tanks of non-rust Everdur Metal are money-savers for the customer . . . and profit-makers for the utility.

They provide the customer with rust-free hot water indefinitely. They give him long, dependable service . . . with complete freedom from all the trouble and expense that rusted tanks can cause.

From the utility's standpoint . . . rust cannot interfere with the performance of an Everdur-tanked heater, and so interrupt gas consumption. Unprofitable service calls are less frequent. Customers are satisfied . . . good-will is increased.

Everdur Metal is a rugged copper-silicon alloy with high strength and good "weldability." Proof of its wide-spread acceptance is the fact that leading manufacturers of domestic automatic heaters, range boilers and large size storage heaters have standardized on Everdur Metal for rust-proof tanks.

Visit the Copper and Brass Industry Exhibit in the Metals Building, New York World's Fair—1939.

3946

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EVERDUR METAL

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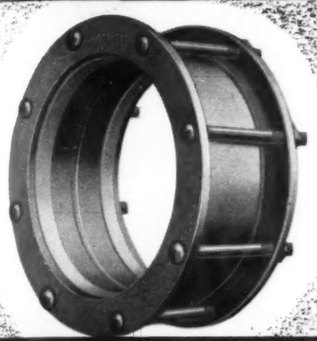
Everdur TANK METAL

ANACONDA
from mine to consumer

THE AMERICAN BRASS COMPANY, General Offices: Waterbury, Connecticut

In Canada: Anaconda American Brass Ltd., New Toronto, Ont. • Subsidiary of Anaconda Copper Mining Company

DAYTON PIPE LINE REQUIREMENTS



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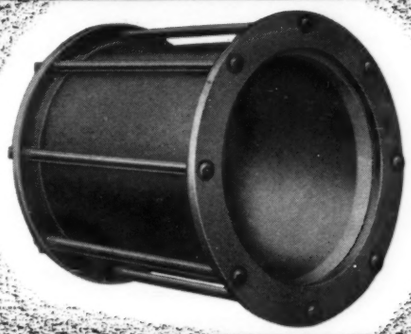

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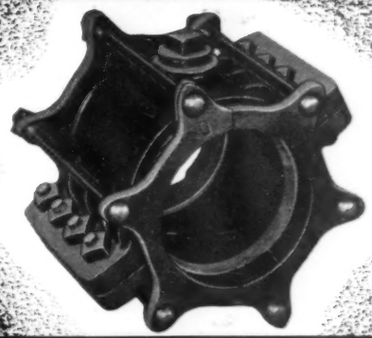

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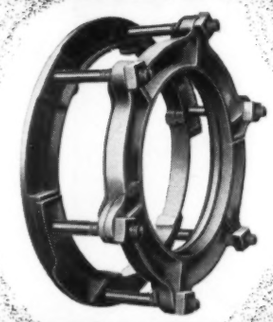
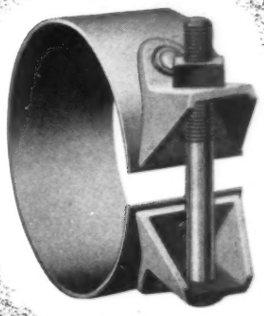


No. 12-B BELL JOINT CLAMPS

OVER FIFTY YEARS of experience in the manufacture of equipment for every branch of the oil and gas industry is back of every Dayton product.

This intimate knowledge of the industry's requirements plus unparalleled engineering and manufacturing facilities assures the users of these products the highest possible performance efficiency.



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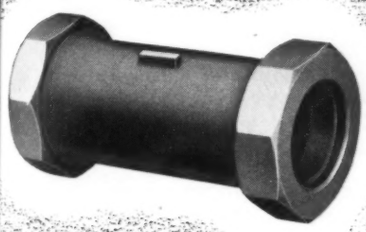
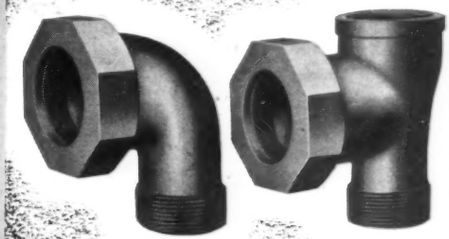


BOLTLESS COUPLINGS



No. 18 COMBINATION SERVICE ELBOWS
No. 17 COMBINATION SERVICE TEES

DOUBLE STIRRUP SADDLES

NATIONAL

THE NATIONAL SUPPLY COMPANY

EXECUTIVE OFFICES: PITTSBURGH, PA.
DIVISION OFFICES: FT. WORTH, TEXAS; TULSA, OKLA.; TORRANCE, CALIF.
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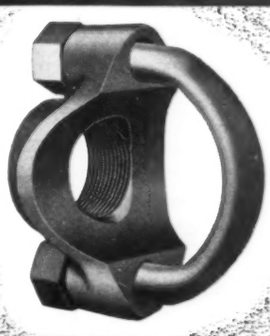


SINGLE STIRRUP SADDLES

UNIVERSAL

STYLED FOR BEAUTY ★ DESIGNED FOR PERFORMANCE

for 1939

cp

• *Every range in the 1939 Universal line qualifies for the CP seal of Certified Performance.*

★

Universal for 1939 presents to the Gas Industry, ranges which can, without qualification, form the spearhead of its aggressive attack to solidify its dominant position as the ideal and preferred cooking fuel. ¶ Styled in keeping with the modern tempo, Universal Ranges have a classic simplicity of design that gives the assurance of continued appeal and freedom from style obsolescence. ¶ Built to the highest standards of craftsmanship and quality, they guarantee dependable, trouble-free service and permanent durability. ¶ Embodying every advanced device, they place at the command of the Homemaker, every known method of food preparation, providing new convenience of use—greater adaptability of service—and over-all economy of time, food, fuel and effort. From every standpoint, Universal Gas Ranges promote a new and higher standard of controlled cooking performance.

UNIVERSAL GAS RANGES

CRIBBEN & SEXTON COMPANY, 700 NO. SACRAMENTO BLVD. • CHICAGO

GAS
FEBRUARY 1939

GUEST Editorial

A Strong Attack is the Best Defense

By FRANK H. TREMBLY, JR.

Chairman, Industrial Gas Section
American Gas Association

THIS principle applies with equal force to business as well as to military affairs, and the preliminary reports of the gas industry's progress in the year 1938 bear witness to the truth of this military axiom. The past year was for many industries a year of trial and difficulty, with a promising ending falling far short of compensating for a poor beginning.

During a year when the business index dropped from a previous year's high of 122 per cent (1923-1925 = 100%) to a low of 72 per cent and only partially recovering, the total revenue of the gas industry decreased but 1.8 per cent from the previous year. This is a striking illustration of the stability of this industry and of its sales momentum.

The successful weathering of an "off" year is directly traceable to the aggressive and determined spirit that has, with increasing effect, directed the energies of the gas industry over the recent past years. This has found expression in many ways; a determination to firmly retain the load it now possesses; a well-directed program to improve and completely modernize its appliances; and a militant effort to obtain new business in every possible field.

This crusading spirit has been strongly felt in the non-residential field, where aggressive steps have been taken to add new load in both the industrial and commercial categories. In spite of a substantial lessening of business tempo in 1938, the combined industrial and commercial revenue was slightly ahead of 1937 for manufactured gas, the natural gas commercial revenue was off only 1.6 per cent and the heavy industrial natural gas revenue off only 13.0 per cent. This is an amazing performance, when the extent to which business fell off in 1938 is considered.

This can mean but one thing—that the new industrial and commercial appliances added to our lines—the increased "connected load"—was enough to offset the decreased use of the existing gas equipment in all but the "heavy industries." This fortunate characteristic of the non-residential load—this ability to constantly replenish and enlarge itself, when proper cultivation is provided, strongly recommends it to the management of the industry.

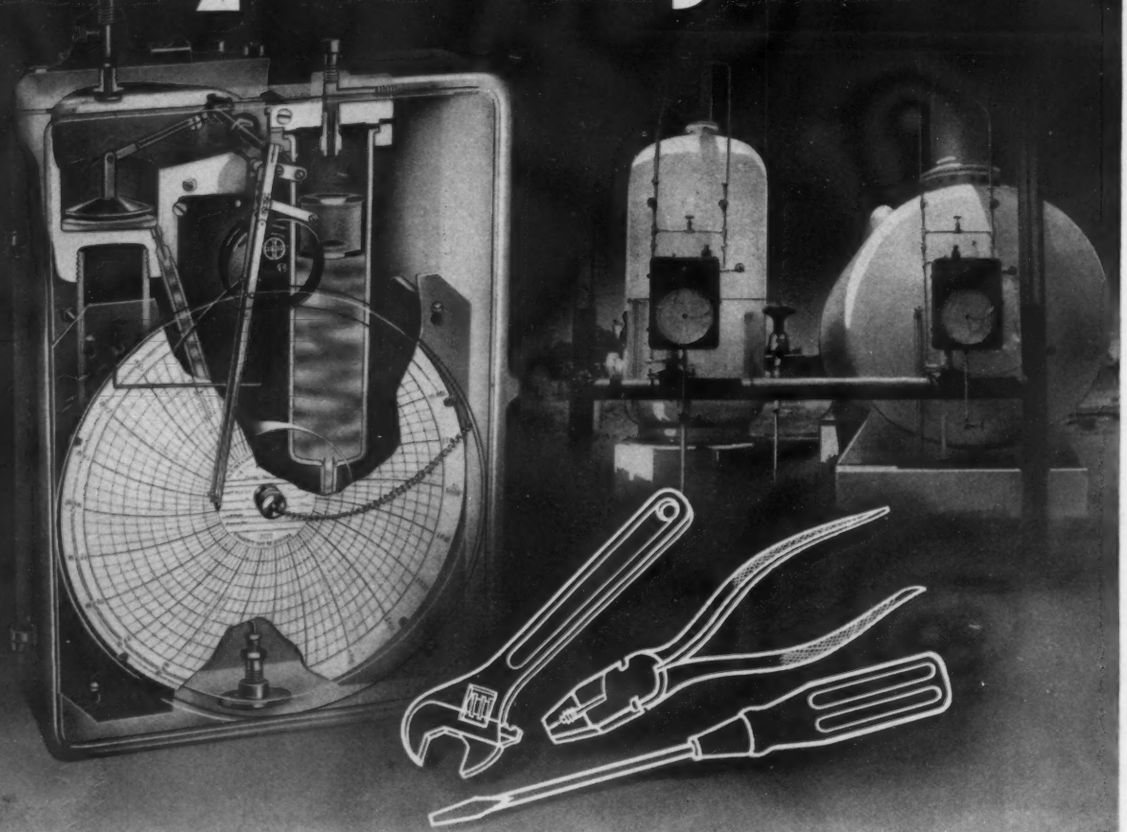
This maintenance of send-out has not been easily accomplished, during a period of industrial retrenchment. It has required strong selling methods, has necessitated carrying the fight to our competitors, and has forced the realization upon our customers that to use modern industrial and commercial gas equipment pays dividends, even in a period of business decline.

This increased connected load in the non-residential field is a great asset to the gas industry—a back-log of potential gas consumption that will result in substantial increases in revenue, as the pace of general industry quickens. The connected load will continue to grow, as long as industrial and commercial gas salesmen go out with the determination to place on gas lines every operation and application that can be economically justified.

There has been an increased appreciation of the value to the industry of this industrial and commercial load—its substantial effect on the send-out curve—the low cost at which it is obtained—the low cost of serving it—the high revenue per customer—and its ability to stand up in a substantial manner under depressed business conditions.

It is now recognized that this load has become an essential part of total gas utility revenue and that this position has been won by the growth and strength of this load during the past nine years. With this recognition, utility management is, today, giving greater consideration to the reinforcement and extension of this load. This has taken the form of additional sales representation in many localities to contact industrial and commercial customers, and greater promotional advertising funds directed toward this group of customers. Such added attention will pay large dividends to the industry, in the form of a substantial block of revenue, which is almost proof against depression and strong against competition.

Easy to adjust



out in the field

LET'S SEE HOW EASY it is to adjust a Westcott Orifice Meter! The door of the dust-and-moisture-proof aluminum case merely is swung open . . . exposing pressure spring, clock, chart, and recording mechanism. Or, by speedily removing the low-pressure chamber cover of the forged-steel differential gage body, the entire interior is accessible . . . without loosening a single connection that affects accuracy. Adjustments do not interfere with any of the working parts . . . few in number and simple in design, despite their many features and refinements.

Comprehensive literature describes the expense-saving Westcott Orifice Meters and Flowmeters . . . clearly defines their applications. Specifications on the popular new Round Case Indicating Flowmeters also will be mailed on request.

AMERICAN METER CO. MEASUREMENT ENGINEERS CENTENNIAL 1836-1936

343

AMERICAN METER COMPANY
INCORPORATED
Measurement and control of Gas, Oil, Steam, Air and Liquids
PACIFIC METER WORKS • LOS ANGELES • SAN FRANCISCO

THERMALLY *Thinking*

By Stanley Jenks, *Editor*

Appliance Rentals

Davis M. DeBard, who needs no introduction in utility merchandising circles, is persistent in his pursuit of a practical plan to rent load-building appliances. These Yankees never let go, it seems. Today, he advocates the renting of appliances just as ardently as he did when I first discussed the question with him years ago.

In the December issue of the Stone & Webster *Bulletin*, he has an article suggesting an "equipment company" to bridge the gap between the manufacturer and the commercial banker. It sounds very interesting and let me say feasible in making the long-term leasing of load-building appliances a practical possibility. Rental plans where they have been tried in a limited way have been successful enough to merit serious further consideration as a potential solution to our major domestic load-building problem.

However, from personal observation, I have to take issue with Mr. DeBard when he cites the rental plans of English utility companies. They are not possible in this country nor are they the unmixed blessings he suggests they are. Because of different regulatory laws, British utilities can and do incorporate their appliance rental expenses in their rate structures. I refer to the "all-in" rate, whereby customers are provided with appliances at no cost at all, provided they agree to use a specified amount of service a month. The rate itself takes care of the cost, servicing and amortization of the appliances. In this country, it would mean public service commission control of our merchandising to do this. Another factor is that British rental practices are a decided handicap in the development and improvement of appliances. I have seen old gas ranges, 14 years old or more, brought into gas company repair shops in England, pickled and re-enameled, worn out oven linings replaced, and sent out again on rental. Not an oven regulator in a carload. Also, in a survey I made of the British gas industry less than five years ago, I searched through dealer stores in town after town trying to find a gas range on display but without success. British dealers cannot compete with the gas company's rentals. They are sore about it, and accordingly are ardent advocates of competitive fuels. In fairness to Mr. DeBard, it should be stated that in his "equipment company" plan, the dealer is to have equal status with the utility. But, nevertheless, this restrictive condition does exist in England.

I would hate to be misunderstood on this subject. I am heartily in favor of any plan to accelerate the distribution of load-building appliances. Who isn't for that matter? If Mr. DeBard's plan can be worked out and operated successfully, no matter how they do it in England, it should be given a chance to prove itself.

Public Relations

In this column last October, I stated that industry is misunderstood more often than not, because it is *not understood*. I pointed to the cold complexity of the average financial statement or annual report as one of the principal reasons why so-called "big business" is so vulnerable to the attacks of witch hunters and political demagogs.

No industry is more susceptible than ours to demagogic attack. Sound public relations, which is a clear public understanding of our economics, aims and problems, is the keystone of progressive utility management today. In this same October issue, we printed as an illustration of my point, the six months' operating statement of the Brooklyn Union Gas Co., each item explained so simply by President Clifford E. Paige that any financial tyro could readily understand. It is certain that Brooklyn Union employees must have had a much clearer conception of the company's operations, and I'll bet that many a disturbing question in employees' minds was answered right then and there, to the general betterment of the

employee morale, which in the last analysis, is the first requisite of a sound public relations program.

That the times call for greater frankness in management's relations with employees, stockholders and the general public, is conceded by the National Association of Manufacturers in its recent book *Making the Annual Report Speak for Industry,* compiled by James P. Selvage and Morris M. Lee and published by the McGraw-Hill Book Co. It is well worth every cent of the $4.00 it costs to any public relations-minded gas executive searching for ideas. It is gratifying to note that the compilers have drawn generously on the utility industry for their source material. The Connecticut Light & Power Co., Consolidated Edison Co. of N. Y., Rochester Gas & Electric Corp., Wisconsin Public Service Corp. and such essentially gas industry manufacturers as American Meter Co. and Servel, are represented in its pages.

Put *Making the Annual Report Speak for Industry* on your "must" list.

National Advertising

Much of the credit for the excellent national advertising that is doing so much to re-establish gas as a modern fuel in the minds of millions of American housewives (I'll get the devil for that on "The Woman's Viewpoint" page)—er—homemakers, definitely belongs to Major T. J. Strickler, chairman of the A.G.A. committee directing this $1,500,000 three-year program. His election at Atlantic City to the second vice-presidency of the A.G.A. was, I feel, a timely recognition of his constructive activities in this and other phases of the industry.

The importance of our national advertising cannot be over-emphasized. As Major Strickler himself told me in a recent letter—but, I'll let him speak for himself. He writes:

> "A broadening of the scope and effectiveness of our national advertising program is greatly needed and should be undertaken by the industry beginning with July 1939. With the modest funds at our disposal we have made a splendid start. But the volume of advertising we are doing is not commensurate with the job that needs to be done, nor does it measure up to the ambitious spirit of our most aggressive and forward-looking managements.
>
> "Time is right, sentiment and all other factors appear to be right to launch a larger campaign and capitalize on the increased benefits that are sure to result. Let us hope this will be one of the outstanding accomplishments of 1939."

Right! It will be tragic if the gas industry is content to rest on its laurels, just as it is beginning to go places in a big way again.

A Challenge

Roger Babson, the prolific prognosticator and stethoscopic statist to the body economic, has been at it again. About five years ago, if my memory serves me right, he pronounced the last rites over the manufactured gas industry. He still thinks the manufactured gas industry is on its death bed, according to a recent circular issued to sell Babson's Investment service. In it, he lists manufactured gas as a declining industry. He is right in this respect, it certainly declines to die.

Mr. Babson is like a consulting physician. All he has to sell is his opinion. It is too bad, with so many investors dependent on him for financial guidance, he should be so erroneously informed, and spreading such utter bunk around. The manufactured gas industry is very much alive, and never has it faced a better future. Mr. Babson should be told that the manufactured gas industry today is serving more American homes than ever before in its history, that its revenues from house heating, industrial and commercial customers were also the greatest in its history during 1938; and that for the first time since 1929, the domestic sales curve turned upwards last year to end the year 1.5 per cent ahead of 1937.

Furthermore, and it is a common error where the prophetic mantle is draped around a human slide rule, he apparently has given no consideration to the spirit within the industry, or the weapons it has now available to fight for its future development. The C.P. range to Mr. Babson probably sounds more like a western cattle ranch than the finest piece of cooking equipment ever made available for any fuel, even gas, which is still the best of them all.

Major Strickler is right. There is an urgent immediate need to supplement our present national advertising with copy directed at the investing public to offset such misleading propaganda. The industry may not be rolling in prosperity these days, but its inherent stability and the necessary service it renders, are an ample guarantee of its continued existence.

It's a Gift

Many of my friends think that Santa Claus lives in Washington, D. C. Then it must be some other guy very much like him, that they have in the Los Angeles Bureau of Power and Light. He certainly was doing his stuff in a big way in the City of Angels before Christmas. Or was he? Anyway, here's the story. Like most of our current Santas, he has access to the public cash register, the source of present day largesse. During December in Los Angeles, if you bought an electric range, gold star *et al,* you got "absolutely free" (sic) (1) a $19.95 portable radio with push button tuning or an electric mixer of equal value, and (2) a $14.25 set of aluminum kitchen utensils in exchange for your old stove.

An interesting question for the Los Angeles citizenry to answer is—who paid for these munificent gifts from their Bureau of Power and Light—the hapless range purchaser or the taxpayer?

The Mass Market . . . . No. 1

What Is Its Capacity to Purchase More Gas Service? What Partial Loads Are Available?

By STANLEY JENKS Editor, GAS *

IN 1935-36, the Federal government tells us the income of America's "average" family was $1160 a year, or $96.66 a month, or $22.30 a week. In the gas industry, the general average is 4.5 individuals per residential meter. It is a fair assumption that the average family of 4.5 men, women or children is facing life in the United States on a total income of less than $100 a month. Any industry that serves a mass rather than a class market is not facing facts squarely, if it fails to include this situation in the formulation of its sales policies and plans.

The purpose of this series of articles is two-fold. First, to face facts, which means analyzing this mass market's capacity to buy more gas service than it is using at present, and second, to indicate some of the partial loads which are possible because they are within the capacity of the mass market to buy. Should the writer be accused of expounding the obvious, his only reply is that manufactured gas sales policies today would seem to be ignoring the obvious.

The sales and promotional policies of all gas utilities are built around the following:

1. Rates.
2. The sale of load-retaining and load-building gas appliances.
3. Customer education in the use of the service.

Before we get down to cases, it might be as well to survey the national picture and A. G. A. statistics of the manufactured gas industry, especially its domestic revenues (less house heating) and numbers of customers during the last 10 years. The figures themselves explain the heroic measures that the industry took in 1937 and 1938 to meet a situation which was anything but cheerful, to say the least.

Year	Revenue (Thousands of dollars)	Customers (Thousands)	Ave. annual revenue per customer
1929	$315,703	9,264	$34.08
1930	317,103	9,280	34.18
1931	311,850	9,186	33.95
1932	303,491	8,776	34.58
1933	279,285	8,708	32.07
1934	274,157	8,837	31.02
1935	265,379	8,957	29.63
1936	258,924	9,063	28.57
1937	256,853	9,276	27.68
1938 (est)	260,963	9,289	28.09

Praises be! The trend downward was definitely halted in June 1938, and may its upward climb be constant from now on. There is also great cause for pride in knowing that today the manufactured gas industry is serving more American families than ever before in its history. But what doth it profit an industry if it gaineth them all and loseth its shirt. And that's just about the fate awaiting some manufactured gas companies unless their domestic revenues show some immediate improvements.

There have been many reasons advanced to account for the above decline. Rate reductions, changing social habits, first a depression and then a "recession," and more efficient domestic appliances are undoubtedly contributory. From 1929 to 1938, average annual sales per customer dropped from 27.6 M c.f. to 21.3 M c.f., a reduction of 22.4 per cent. This has happened in the face of selling a million and more gas refrigerators, about two million automatic gas water heaters and several hundred thousand miscellaneous gas appliances such as space heaters, clothes dryers, etc. It just doesn't add up, unless we are prepared, right now, to concede that *the underlying reason for the decline has been the gas industry's failure to meet fuel competition in the domestic field.* There is no fuel application in the

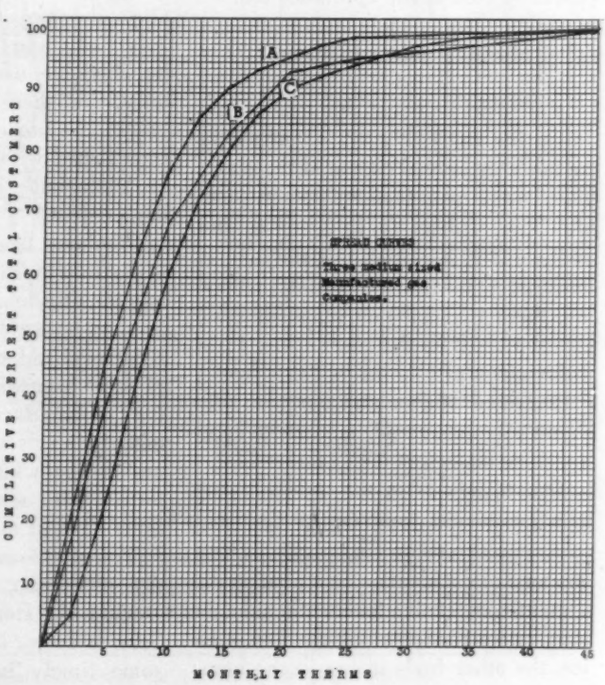


FIG. 1.
Monthly spread curves for three medium sized manufactured gas companies.

*The first in a series of articles dealing with the mass market, analyzing its ability to purchase gas service and indicating partial loads within range of its purchasing power.

TABLE No. 1

COMPANY A	
77 per cent of its total domestic customers	10 therms or less monthly
91 per cent of its total domestic customers	15 therms or less monthly
96 per cent of its total domestic customers	20 therms or less monthly
COMPANY B	
69 per cent of its total domestic customers	10 therms or less monthly
82 per cent of its total domestic customers	15 therms or less monthly
92 per cent of its total domestic customers	20 therms or less monthly
COMPANY C	
60 per cent of its total domestic customers	10 therms or less monthly
80 per cent of its total domestic customers	15 therms or less monthly
91 per cent of its total domestic customers	20 therms or less monthly

TABLE No. 2

Service	*Ave. cost per therm*	*Monthly Cost*
Cooking (10.6 therms)	19.9¢	$2.10
Manual water heating (9.0 therms)	17.4¢	1.26
Automatic water heating (20.0 therms)	16.3¢	3.26
Refrigeration (10.0 therms)	14.4¢	1.44

home, especially the big four of cooking, refrigeration, water-heating and central space-heating, that cannot be done better in every way with gas. Any gas utility salesman will tell you that the only real sales resistance he encounters in selling incremental load-building appliances comes from the cost of operation. The retail price of the appliance, especially in these days of long-term financing and rentals, is secondary, except in those cases where the amount of the monthly payment prevents the customer from paying the operating cost of the appliance too.

Monthly Spread Curves

It is appropriate at this time to examine the chart, Fig. 1, which shows the monthly spread curves of three medium sized manufactured gas companies. Two of them are in New England and one is in Virginia. For the sake of uniformity usage has been translated into therms, and the curves were made cumulative. Round figures taken from these curves are shown in Table No. 1.

Company C, which incidentally shows the best spread, reports its average domestic bill is for 11.8 therms.

This brings us to the theme of our first article. So long as the vast majority of our customers only cook with gas we are decidedly vulnerable in the present competitive fuel market, for so long as we render a one-use fuel service, the other fuels in use in the home are daily threats to our hold on that customer. Public appreciation of the merits of any public utility service is directly proportional to the usefulness of that service. Electricity's claim to modernness is based more on the many uses it has in the home than on anything else. "Electric home" immediately creates in the mind of the public, a home where labor is reduced to the minimum, comfort and convenience advanced to the nth degree, and all at the touch of a button. It is not hard to find a dozen common uses for electricity in the home, other than those allegedly competitive with gas service. Telephone and water service are entrenched because they have no substitutes. But, there isn't a single use for gas in the home which cannot be accomplished with some other fuel—not as well—but "needs must when the devil drives."

If this be true, then we have a primary job of supplementing this one-use cooking load with some other use as soon as we can. Old stuff? Maybe. It is never old stuff so long as it is the greatest immediate problem confronting the manufactured gas industry, and until it is solved in any manufactured gas company's territory, there can be no room for sales complacency or any other kind of major sales effort.

The 1938 rate committee of the A.G.A., under the chairmanship of Donald A. Henry, Stone & Webster Service Corp., in its annual report has some timely information in this respect. In analyzing the rates of manufactured and mixed gas companies with a total of 5,381,000 domestic customers (approximately 58.0 per cent of the total) it finds the average usage and cost as appears in Table No. 2.

How Successful?

These figures prompt the question, how successful have they been in getting the business? The same report (p. 16) shows an automatic water heater saturation of 14.3 per cent. This, mind you, after many years of hard pounding and intensive sales effort with an appliance of superlative merit, indispensable—shall we say—in any home that is truly modern and where gas service is available. What is the stumbling block? Original cost of equipment? Hardly, when it is a good bet that there are three times as many automobiles as there are automatic water heaters in the average community served with manufactured gas. Why beat about the bush any longer? Everybody knows that the real sales resistance is the cost of operation. Why? The answer is again simple. Most of our customers cannot afford central automatic gas water heater service at even 16.3¢ a therm. How much can they afford? Perhaps there's a good clue in the following paragraphs.

Earlier, it was stated that the average family in this country has an annual income of $1160 or approximately $96.60 a month. Sociological and economic surveys made by various agencies and substantiated by the U. S. Bureau of Labor, and the U. S. Railroad Wage Commission, show that the average American family spends from 5.5 to 6.5 per cent of its income for light and fuel. A booklet entitled "Money Management" issued by the Household Finance Corp. shows an even smaller percentage expenditure for fuel, light, power and refrigeration in the average home. Based on various income groups, this book shows from 3.0 to 5.0 per cent. To give ourselves the widest possible margin, let us assume that 6.5 per cent of total family income is a reasonable figure for fuel and light usage. And to take the curse of a possibility that our average family income is too low, let's assume that the average income per family is 50.0 per cent higher than the national average, that is $1740.

(Continued on Page 25)

Use of the Whistle in the Purging of Gas Lines; for Measuring Density and Gas–Air Ratio of Fuel Mixtures

By DR. ERNST SCHUMACHER, Munchen, Germany

Translated by S. C. SCHWARZ, Chief Chemist, Portland Gas & Coke Company*

IF one blows into a whistle designed according to sketches in Fig. 1, made from a piece of brass or iron pipe with a diameter of about 10 mm. and a total length of 10 cm. and with a pressure of about 50 mm. of water, the whistle will give a definite sound. The pitch of the sound will depend on the length of the whistle; that is, in the case of the closed end whistle which will be discussed first, upon the distance (L) in meters that the piston is away from the sharp lip. By varying (L), that is, by shifting the piston, the pitch of the sound can be varied. The value of (L) is one-fourth the wave length W, or $L = \frac{1}{4} W$ meters (m.).

The pitch of the tone given by a whistle also depends upon the nature of the gas used for blowing same, as well as upon its length (L). With gases lighter than air the pitch becomes higher, and with heavier gas, it becomes lower than with air. The cause of this variation is the difference in velocity of sound in various gases. The velocity of sound is greater in a light than in a heavy gas. The velocity in air V_a is about 333 m. per sec. In a gas with density of (S) (compared to air = 1) the velocity $V_g = V_a/\sqrt{S} = 333/\sqrt{S}$, m. per sec. With city gas having $S = 0.5$, $V_g = 333$ per $\sqrt{0.5} = 467$ m. per sec., with propane having a value of $S = 1.5$, $V_g = 333$ per $\sqrt{1.5} = 270$ m. per sec.

The pitch of the tone depends upon the number of vibrations per second. For example, if the number of vibrations per second, N, equals 435, the tone is (a) on staff; if N = 522 per sec., the tone is (c) on staff, etc. The relation between rate of vibration N per sec. (or pitch), velocity V_g, m. per sec., and wave length W, m., is as follows: $N \times W = V$ (rate of vibration $\times$ wave length = velocity). Since $V_g = V_a$ per $\sqrt{S}$ and $V_a = 333$ m. per sec., then $N \times W \times \sqrt{S} = V_a = 333$ m. per sec. Since the tube length of a closed whistle, as already mentioned, is equal to W4, or $4L = W$, the relation can be expressed for the purpose at hand as follows: $N \times 4L \times \sqrt{S} = 333$ or $N \times L \times \sqrt{S} = 333$ per $4 = 83.25$ (L measured in meters) or $N \times L \times \sqrt{S} = 8325$ when L is in cm.

The foregoing facts pertaining to acoustics may be applied to the purpose at hand. The above mentioned relations are illustrated in Fig. 1, using common coordinates, and in Fig. 2, with logarithmic scale.

The Whistle as Indicator for Purging Gas Lines

If a whistle is attached by means such as a rubber hose to the end of a gas line to be purged, a deep tone will be

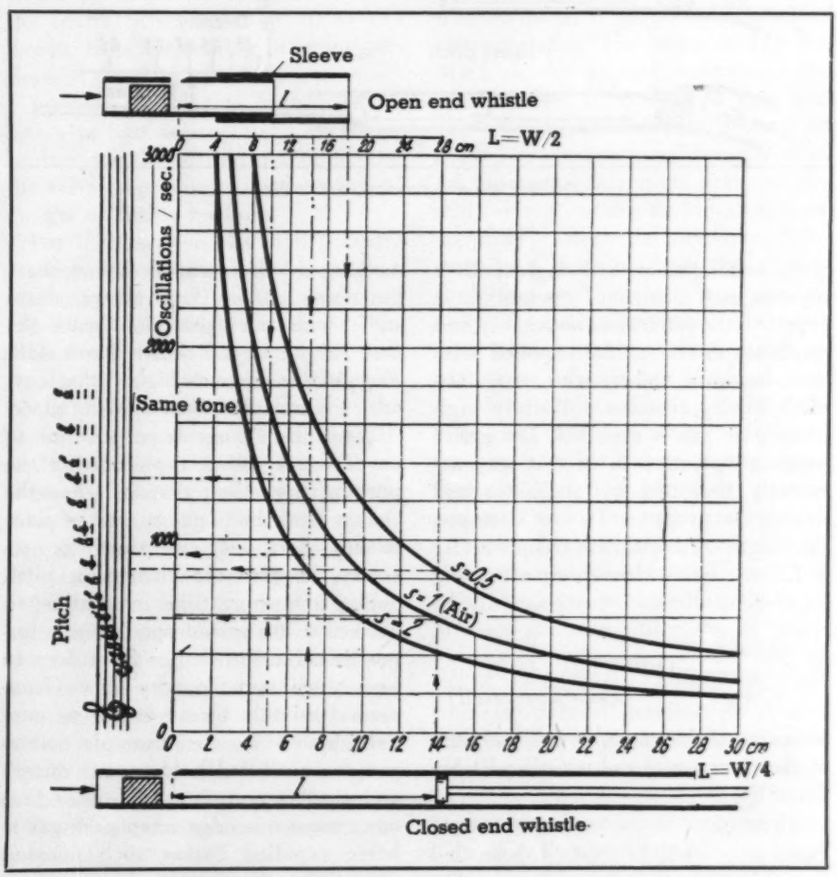


Fig. 1. Relation between oscillations and length of whistle.

*Dr. Schumacher's report was first published under the title, "Application of Whistles to the Gas Industry," in *Das Gas und Wasserfach*, Vol. 43, pp. 760-762 (1938). Through the courtesy of Mr. Schwarz, this translation was made available to *G A S*.

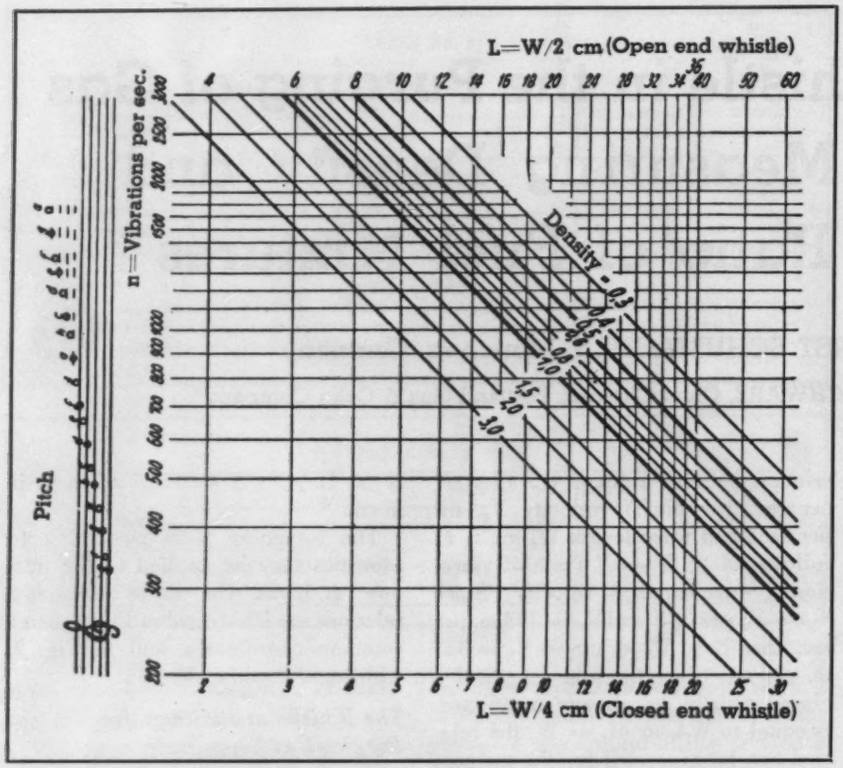


Fig. 2. Relation between oscillations and length of whistle for different densities.

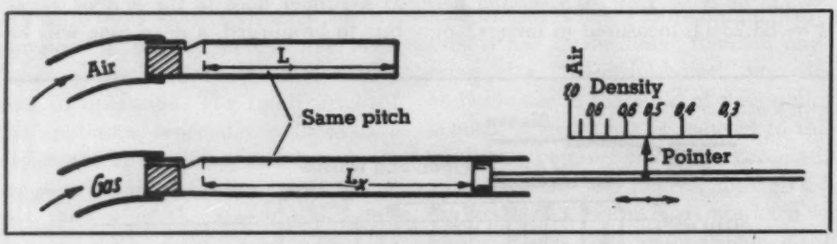


Fig. 3. Pitch and density relationship.

given as long as air is being expelled. As soon as a mixture of gas and air is expelled, the pitch rises noticeably and continues to rise as the expelled mixture becomes richer with gas. The pitch finally remains uniformly high when pure gas is expelled. The entire purging operation is in this way accurately indicated by audible sound during its progress. If, for example, the length of the whistle chamber (L) is 7.1 cm., the pitch with air according to aforementioned equations will be

$$N_a = \frac{8325}{7.1\sqrt{1}} = 1176$$ (Note (d) on first octave above staff);

with city gas having S = 0.4, the pitch in the chamber of the whistle will become

$$N_g = \frac{8325}{7.1\sqrt{0.4}} = 1860$$ (Note (a) on 2nd octave above staff).

As long as air is expelled, one hears the note (d) on first octave above staff; with pure gas, one hears the note (a) on second octave above staff. The pitch is so much higher, that anyone can determine what is taking place.

When the change from pure air to pure gas is rather rapid during the purging operation, that is, when the change from air to gas at a given place is very short, only one whistle is necessary, because the change in pitch during the short time interval is so marked that a misinterpretation is impossible. But the change from deep to high pitch may be very slow (from several minutes to one-fourth or one-half hour) as for example, when purging air filled holders, gas meters and similar apparatus. In order that one cannot misjudge when pure gas is being expelled during such purging operations, a second whistle previously tuned by blowing with air from the mouth against the purging whistle when latter is blown by the pure gas, may be blown from time to time during the purging operation until the pitch of both whistles becomes the same. When the pitch of both whistles is the same, then pure gas is flowing from the line.

Example: The purging whistle has (L) = 10 cm. long, the density of the gas is known to be 0.5, then the pitch with pure gas is $N_g \times L \times \sqrt{0.5} = 8325$.

$$N_g = \frac{8325}{10\sqrt{0.5}} = 1176$$

The reference whistle shall have the same pitch when blown with air, and must therefore have the following length:

$$N_a \times L_a \times \sqrt{1} = 8325$$

$$L_a = \frac{8325}{1176\sqrt{1}} = 7.1 \text{ cm.}$$

(or about 3 cm. shorter).

A small whistle has a gas consumption of about 0.3 to 0.6 cubic meters per hour. If there is insufficient pressure in the line to be purged, one may draw the gas from the main by any convenient method such as a rubber bulb. The gas pressure ahead of the whistle should be quite uniform since the pitch is slightly affected by the pressure.

Use of the Whistle for Measuring the Density and Gas Content of Air-Gas Mixtures

If one uses two whistles, one of which has a fixed length and the other a variable length, one can simply and accurately determine the density of gases therewith. The whistle with fixed length (L) is blown with air while the other whistle with the variable piston is simultaneously blown with the gas to be tested for density. The whistle blown by the gas is brought to the same pitch as the whistle blown with air by means of the piston; that is, both whistles are brought to the same tone. The distance (L_x) of the piston in the variable pitch whistle can then be measured when the tones are equal; therefrom the density can be calculated, or read from a calibrated scale attached to the arm of the piston.

For both whistles, the relation is $N \times L \times \sqrt{S} = 8325$. For the air

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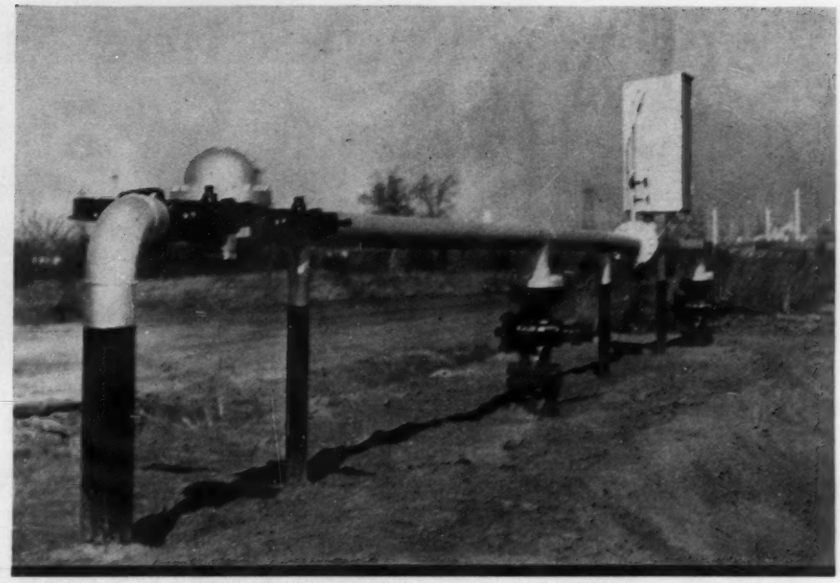


FIG. 1. Meter setting for lease manifold service, showing the pressure regulator at left set between quarter-turn plug valve and regulator bypass between supports.

Transmitting High Pressure Gas for Oil Well Lifting

THE gas-lift, as applied to flowing oil wells with gas collected from the field and compressed to required pressures, is widely used for producing oil where the natural or reservoir pressure is inadequate to lift the oil to the surface. Lifting costs, even when the central compressing plant costs are figured against the per-barrel rate, compare favorably with other means of mechanically lifting crude petroleum to the surface, with the gas-lift method offering savings in cleaner operation, greater freedom from clean-out problems, and a reduction of well-head equipment.

The great East Texas oil field, establishing many "firsts" in its producing life, has now, through the efforts of a natural gas producing company, established another record: it offers a market for gas from other fields for gas-lift purposes, utilizing high-pressure from gas wells, through high-pressure pipe lines, to flow the wells without expensive surface compressor installations.

The Hunt Companies, Gas Division, represented in the East Texas area by John W. Lee, Trustee, of Tyler, drilled and brought in a 32,000,000 cu. ft. gas well at their Chapel Hill lease, 10 miles west of the great oil field, the flow being obtained through 1¼ in. tubing. This high pressure gas, passed through a separator to dry it, is then metered and taken to the field through a 6⅝ in. seamless line, branching at the central distribution point to two five-in. lines for serving different portions of the field.

FIG. 2. Simple type of gas connection to oil well, showing line attached to casing, with one-inch branch tied in to top of tubing to permit "rocking" well with gas.

First tied into this high pressure line were four pairs of wells, each pair equipped with a different type of gas-lift valve to permit a thorough test of the gas as lifting medium.

For lease service, the high pressure gas from the main is passed through a regulating valve and reduced to around 350 lbs. p.s.i. The lease manifold consists of a by-pass carrying meter and regulating or reducing valve, with means being provided whereby the high line pressures can be turned directly into the well casing for cleanout or other producing needs, or it may be passed, through the well-head tie-in, directly into the flow line to lease tanks for clearing them. (See Fig. 1.)

As a result of the tests on the initial installations, upwards of 100 wells are now being flowed with this high-pressure gas, and others are being added as branches to the main line and lease service connections can be installed. Fig. 2 shows a method of connection to the oil well.

The Hunt Companies, as gas producers, are interested in obtaining a market for their gas, selling it to oil well producers on an energy basis, without question of fuel value or other characteristics. The price of 11¢ per M c.f. is, at present operating, distributed over from three to four barrels of fluid obtained, an average of around 300 ft. per barrel being secured on the tests. This high pressure gas still further justifies its initial or lease manifold cost to the producer, however, by picking up from the oil natural gasoline which is in turn marketable. The lifting gas, when processed in a natural gasoline plant, yields an average of 4.7 gals. per M c.f.

This natural gas flowing of the wells thus gives the well owner additional revenue from his lease over and above the restricted flow of crude allowed each well under the rigidly maintained proration restricting the per well output to around 20 barrels of crude per day. The lease owner using the high pressure gas as a lifting means therefore has to offset in part the cost of gas by the additional revenue obtained from the natural gasoline plant, and then may, under terms of the gasoline plant's contract, have the spent gas returned to his lease for firing oil-treating equipment or other lease needs.

In thus developing a use for high-

(Continued on Page 42)

Trends in Regulation—Federal and State—Management Attitudes

THIS discussion concerns itself with three questions:

1. What are the more significant current trends in regulation?

2. What are or should be the relations between state and federal regulatory agencies?

3. What are or should be the attitudes of management toward these developments?

• DR. E. W. MOREHOUSE, chairman, Accounting Committee, National Association of Railroad & Utilities Commissioners, Public Service Commission of Wisconsin, Madison, Wis., in a paper, "Federal and State Regulation and Management Attitudes," presented before the Joint National Accounting Conference of the American Gas Associa'ion and the Edison E'ectric Institute, Chicago, Ill., December 12-14, 1938.—(Abstract by G A S).

Trends in Regulation

Public control generally, and utility regulation in particular, is in a period of transition characterized by accelerated changes in both *scope* and *character*. The Federal government entered the stage, not only to close gaps in state regulation but also to help states catch up with changes in utility industries which were escaping any form of public scrutiny. These new Federal and remodeled state statutes cover many new subjects—contracts between affiliated interests, depreciation, plant additions, budget approval.

The changing character of present-day regulation, though more subtle and less apparent, is of deeper significance. Early state commissions were endowed only with powers of investigation and publicity; somehow informed public opinion was supposed to enforce proper behavior. Then order-issuing powers were granted, and commissions became more like policemen than publicity bureaus. Commissions, as policemen, were only supposed to protect the public from the results of abuses. Now, however, there is being superimposed upon police regulations a type of control which can be described as policy-forming. Commissions are adding to their police functions the role of supervisors of industrial policies. The SEC is now engaged in administering a change in policy respecting the organization and control of gas and electric utilities. The FPC is studying what policies should be followed to further the interconnection and strengthening of power systems or to improve financial structures. Some state commissions have stimulated or required interconnections, have insisted upon reorganization of capital structures, have required complete revamping of property records, or have ordered changes in rate-forms and simplification and standardization of rate structures. Such requirements were rare before the depression but are becoming less exceptional now.

Statements by some utility officials make abundantly clear that they regard these regulations as usurpation of management. It is true that the scope of management's discretion and prerogatives has been narrowed. But those who are irked by this tendency should examine its foundations, because this expansion of regulation is here to stay until something better is devised.

Added Duties

The addition of policy supervision and formulation to Commission duties is grounded chiefly upon two basic changes in economic institutions. One is the depression-induced collapse, or at least impairment, of public confidence in not only utility but all corporate finance and control—in other words a "depreciation" of public relations. With millions of unemployed and with millions of idle dollars, despite bountiful resources, is it any wonder that the common man questioned the competence and the policies of business leaders? In this state of insecurity and uncertainty, the average man has sought refuge in government as the only institution believed strong enough to cope with an entire industry or the industrial system.

And so we have a second basic change—the growing concern of government, especially in a democratic society, for the economic conditions and standards of living of its citizens. Join together government's greater responsibility for economic conditions and the public's lack of confidence in industrial leadership and you have a cornerstone for the newer forms of administrative control. Four of these new forms are as follows:

1. Effective regulation is hampered and made more expensive if management chooses to obstruct its processes —by seeking to play one jurisdiction off against another and trying to drive a wedge between them, by being unwilling to deal with both jurisdictions jointly, by withholding information, or by promising degrees of cooperation that are never performed.

2. Many pronouncements or rulings of the courts lead to delays and added expense in investigation and litigation. Cost of reproduction estimates are a case in point. Moreover, some recent court decisions seem to be emphasizing procedural requirements. These are a subtle threat to administrative efficiency in that both state and federal agencies might feel obliged to fritter away their energies in complicated procedures when in reality commission functions require flexibility and informality. Too much preoccupation with procedure leads to sterility.

3. Reasonable and constructive regulation is endangered if commissions can not get and hold competent personnel to administer their added responsibilities. This is a truism.

4. Finally, if jurisdictional conflicts between state and Federal agencies should occur, in the long run both industry and the public suffer. This brings up the subject of Federal-state relations in administering their added responsibilities and powers.

Federal-State Relations

This problem is two-sided. On the one hand, the growing revival of state activity in regulating utilities might stimulate an extreme states' rights attitude, resenting any contacts with, or

Branch managers and sales representatives of the L. J. Mueller Furnace Co., Milwaukee, at the 30th Annual Sales Conference, Astor Hotel, Milwaukee.

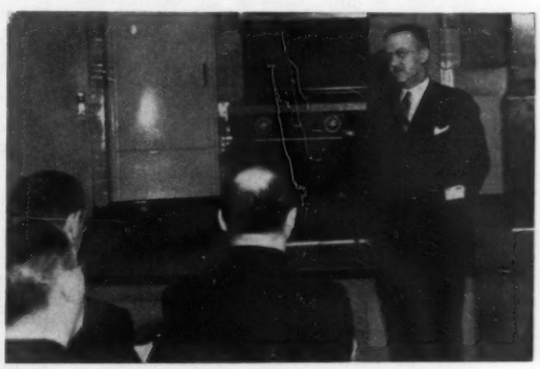
GAS Camera

AT RIGHT: B. L. ROGERS, compressor plant superintendent of Lone Star Gas Co., Dallas, Texas, outlines for his district compressor engineers plans for stepping up gas supply for winter demand. Around him, left to right, are CECIL CARDWELL, Shamrock; W. E. JOHNS, Fox Field; RALPH SHIPP, Petrolia; O. H. MOORE, ass't supt.; M. W. CROWDER, Joshua, and SAM GAMBLE, Ranger.

W. G. RUSSELL, field representative for GAS, making the rounds in Houston, Texas.

AT LEFT

FRED HOUGH, distribution engineer, Southern Counties Gas Co., Los Angeles, on an inspection tour, at the company's new stand-by butane plant, San Pedro.



AT RIGHT

F. X. METTENET, vice president in charge of sales, The Peoples Gas Light and Coke Co., Chicago, addresses a group of salesmen and dealers.

Members of the sales organization and executive staff of the Detroit-Michigan Stove Co. who attended the company's six-day annual convention held in Detroit beginning December 15. Theme of the meeting was the Diamond Jubilee, celebrating the company's 75 years of stove manufacture.

intrusions of, Federal agencies. That attitude is just as damaging to effective regulation as a lordly attitude by either Federal agencies or management.

On the other hand, Federal agencies have the responsibility of integrating their control with that by the states. It has been said of some Federal agencies that they have an itch for power. If the Federal commissions with which we are most directly concerned were to choose to reach out for broader and broader jurisdiction, seeking to attain national uniformity too rapidly or where it is unnecessary, it would only be human nature for state agencies to resent and resist such encroachment. In that event jurisdictional conflicts might arise, which would only cause inconvenience and expense to the industry and to the consuming and investing public.

As far as my observations go, those who now hold influential positions on Federal commissions support the view that long distance regulation of predominantly local interests in the utility industry is not in the public interest. As long as Federal and state agencies present a united front in joint support of this principle, regulatory effort will not be divided and weakened.

There is a field where Federal jurisdiction is and should be dominant, and likewise there is a field where state control is and should be dominant. Between these two, there is zone of dual or overlapping jurisdiction. Especially, although not solely, in this zone, state and Federal agencies have the challenging task of working out policies and means of cooperation for joint regulation. The development of adequate methods of joint regulation of utilities is one of the most important jobs of the next decade. Unless this problem can be satisfactorily solved, the consequences may be Federal control or public ownership.

There are certain fields of control in which the direction of joint efforts is already indicated. Happily, in matters of accounting a substantial start has been made. The uniform system of accounts for electric utilities recommended by the National Association of Railroad and Utilities Commissioners has been prescribed by the Federal Power Commission in substantially identical form. A majority of the states have adopted either one or the other. The committee of which the author has the honor to be chairman, has gone further. It has recommended lists of retirement units and an annual report form, both of which also have been adopted by the Federal Power Commission without substantial change. It has also worked out a scheme for cooperative consultation in interpreting the uniform system of accounts, in which scheme representatives of gas and electric utility accounting committees are participating.

Numerous opportunities for joint Federal-state efforts appear also in the field of mergers and integration lest these matters, in the absence of joint consideration of some kind, be viewed too much from the standpoint of finance and investors and not enough from the standpoint of operating economies, rate levels, and the interests of consumers. Likewise in passing upon security issues, the determination of depreciation rates, and the fixing of rates for certain limited classes of service, joint state and Federal efforts seem desirable. The important thing is that consultation should take place before official action by either agency, an obligation resting on both state and Federal agencies.

What are the major objectives of some of the state or Federal activities? Take for one example the activities of some commissions in standardizing and simplifying rates. Elimination of most of the great variety of rate forms is intended to avoid unreasonable discrimination and make it easier for customers to understand their bills with consequent improvement of public relations. Moreover, it tends to simplify customers' billing and accounting, and consumer analyses and thus tends to reduce costs.

There is a trend toward more ample provisions for depreciation and for more careful determination of depreciation rates. Improvement of the financial condition of the utility and safeguarding of investors' interests are among the contemplated ends.

The need for revised property records has a three-fold source: (1) unrecorded and improperly priced retirements have been found in most investigations; (2) in other cases incomplete and inaccurate plant records have necessitated expensive field inventories to reconcile books of account and actual used and useful property; (3) the expense of obtaining reproduction cost estimates has suggested a search for less costly and time-consuming valuation methods. If it is contended that a property record to fill the last-named need is more detailed than otherwise necessary, it can be pointed out that as long as courts or utilities insist upon a valuation formula giving consideration to reproduction cost estimates, commission may well feel impelled to insist upon that kind of a record. If some way could be found to eliminate the need for unworkable valuation formulas, property records, though necessary, might not have to be so detailed.

The objectives in property record

CALENDAR

February

Liquefied Petroleum Gas Association, Annual Meeting—Biltmore Hotel, Oklahoma City, Feb. 20, 21.

Mid-West Gas Sales Conference—Stevens Hotel, Chicago, February 9-11.

New England Gas Association, Annual Business Conference—Hotel Statler, Boston, February 16-17.

March

Eastern Natural Gas Sales Conference—Roosevelt Hotel, Pittsburgh, March 2-3.

Oklahoma Utilities Association—Tulsa, Okla., March 20-21.

Southern Gas Association Annual Convention. Southern-Southwestern Gas Sales Conference—New Orleans, March 19-24.

Welding Conference and Short Course—University of Oklahoma, Norman, March 9-10.

Wisconsin Utilities Association, Commercial and Technical Divisions of Gas Section—Pfister Hotel, Milwaukee, Wis., March 13-14.

April

Distribution Conference, Technical Section, A.G.A.—Palmer House, Chicago, April 17-19.

Mid-West Gas Association—Des Moines, Iowa, April 10-12.

Missouri Association of Public Utilities—Muehlebach Hotel, Kansas City, Mo., April 12-14.

May

Association of Gas Appliance and Equipment Manufacturers—Annual convention, Roosevelt Hotel, New York City, May 24-26.

Natural Gas Section, A.G.A.—Annual meeting. Tulsa, Okla., May 8-11.

Pennsylvania Gas Association Annual Convention—Sky Top Club, Sky Top, Pa., May 2-4.

Production and Chemical Committees Conference, Technical Section, A.G.A.—Rochester, N. Y., May 15, 16, 17.

June

Canadian Gas Association—32nd Annual Convention, Royal Connaught Hotel, Hamilton, Ontario, June 1-2.

Empire State Gas & Electric Association Group Meeting—Tower Club, Park Central Hotel, New York City, June 9.

August

National Association of Railroad and Utilities Commissioners—Seattle, Wash., August 23-25.

September

Pacific Coast Gas Association—46th Annual Convention, Fairmont Hotel, San Francisco, Calif., week of September 4.

October

American Gas Association—21st Annual Convention, New York City, week of October 9.

National Metal Congress and Exposition—Chicago, October 23.

revisions are to enable verification of property and changes therein, including retirements, and the costs of plant, and to eliminate the need for periodic re-inventories. The usefulness of such records in original cost and depreciation studies seems obvious. With respect to the costs of this work, it seems well to bear in mind that these costs represent to a certain extent an accumulation of costs deferred in the past and that the recurring cost of such records will be much less than the initial cost of setting them up.

Management Attitudes

The added responsibilities with which regulatory agencies are charged are matched by added responsibilities for management. The greater reach of commission powers requires more information about industries and their operations than formerly. Also these data need to be arranged and set forth in an informative manner if they are to form a basis for reasonable and constructive commission action, and a basis for intelligent opinions on the part of the investing and consuming public. For management to meet this responsibility, it seems necessary to be continually alert and to investigate and analyze objectives of new regulations.

Grant that past differences of opinion will continue, and perhaps become more violent, does it then follow that each party should go its own way and "never the twain shall meet"? Despite ardent differences of opinion, there is room at least for consultation on technical questions of fact and techniques of getting facts. Even though we agree to disagree, consultation on some matters affords a beneficial opportunity for a mutual understanding of differing points of view. This theory has been followed in the work of the Committee on Statistics and Accounts.

In conclusion, there will be little dispute that gas utilities have made great strides in technical, engineering accomplishments. As the public has become more aware of these technical feats, it has become more conscious of the public functions that are thus served. The challenge at the present time is to bring the economic and public relations of the industry abreast of its technical advances. To meet this challenge requires a continual testing of aims and methods.

The New Home Market Means New Gas Sales

• **THIS REPORT was prepared by the Subcommittee on New Homes, H. G. Schaul, Westchester Lighting Co., Mount Vernon, N. Y., Chairman, and constitutes one of the interim bulletins published by the 1938 House Heating and Air Conditioning Committee of the Commercial Section, American Gas Association.—(Abstract by G A S).**

THE NEW HOME market represents to the gas industry today the best potential for new gas sales, and in which gas house-heating can play an important part. To analyze this field, a survey of current sales programs was made, which brought to light many interesting things. This report briefly outlines the more significant phases of this subject and will indicate those activities which have proven most productive.

A study of a large and representative portion of the country has indicated a growing appreciation on the part of the gas industry of the importance of gas house-heating in insuring and developing the use of gas for the remainder of the domestic load.

The significant combination of the electric range and refrigerator, coupled with the oil-fired house-heater and water heater has, in some instances, left gas with no portion of the New Home market. A great number of gas situations has found that the best approach to this problem is through the heating field and that by insuring the use of gas heating, the water-heating was automatically obtained, and the approach for the cooking load easily made.

It was found that the utilities which had special men contacting architects, builders, new home owners, etc., other than their regular house-heating men, made better showings on New Home sales, than in situations where specially trained men were not used.

Because of local conditions and the type of homes built, there has been considerable variation in the nature of incentives offered to builders for installing gas heating. Where the homes are for the most part speculatively built by a limited number of larger builders, particularly where gas rates are not competitive with other fuels, there is often a strong pressure from the builder on the utility to supply some form of tangible cooperation.

In a few instances the utility has made a merchandise offer, consisting of two or more gas appliances in the form of a "package." One appliance is generally a well accepted one such as the gas range, while the companion offer may be one or more of the promotional types of appliances, such as the water heater, house heater, or refrigerator. These have normally been sold to the builder at an attractive, special price, either directly by the utility or through approved dealers. The "package" program insures the extensive use of certain specified gas appliances in new homes, and has been a successful method of creating new domestic load at a low unit cost where the merchandise offer is sufficiently attractive to the builder.

Advertising allowances to the builder have been used, and direct advertising by the utility of a new gas-heating installation has been frequently encountered. There is much to be said in favor of using illustrations and copy, describing a successful new development on gas heating as a desirable advertising theme for general house heating advertising. Since new homes are recognized by the public as incorporating the latest and most acceptable appliances, such proof of the acceptance of gas heating becomes a valuable advertising tool.

Where individually built homes are involved, practically no special incentives are necessary, as the matter becomes a straight selling problem to sell the owner, architect and builder on the desirability of gas heating.

The All-Gas Home

All utilities can profitably tie into the National promotion placed behind the All-Gas Home and cooperate with the builders in their territories in qualifying for prizes in this contest, and in sharing in the promotion which the contest brings with it.

This complete program including gas heating is certain to impress the

builder more than the more conventional approach to the New Home heating field. It definitely gives *national acceptance* to gas house heating, and should be the means of greatly increasing New-Home house heating sales.

New Housing developments the past year have resulted in many changes from the usual procedure in heating homes, and include the six-story Park Lake Apartment installation in Boston, involving approximately a million-dollar investment in 151 apartments, all of which are heated by individual forced-air, gas-fired warm air furnaces, built into small closets or furnace rooms in each apartment.

Another new development has been the small four-, five- or six-room individual home for the low income group. There is a close connection between these two types of installations, since both units, whether apartment or individual homes, are relatively small and compact, and can be heated economically and at a low initial cost with gas-fired warm air furnaces. The layout is such that relatively short duct runs are required. There is an increasing demand in many communities for the smaller type home. With improved construction and a relatively small heat loss, gas can compete most successfully with other fuels in homes of this type, provided the rate structure gives the smaller customer an early advantage of the lower steps.

Use in Apartments

In some communities there are being constructed two-story apartments, involving from 10 to 30 family accommodations, with each apartment being heated by its own gas-fired boiler, or furnace. In some cases the warm air furnace is built into a convenient closet on the same floor. In other cases, where a preference still exists for cast iron radiation, small gas-fired boilers have been used in the basement. Other designs have been worked out, involving the location of a gas-fired boiler in the kitchen, concealed behind a grille beneath the sink, with the water heater also concealed, involving a concentration of gas appliances in one location with the house heater and water heater properly vented. Simplicity of both gas and hot-water piping, and the low cost of installation, are indicated by these designs. By taking full advantage of the form value of gas in permitting the rise of small heating units in special locations, a much greater sale of gas heating can be expected.

The apartment type of gas heating installation involving individual heaters for each apartment is more readily obtainable, when gas rates permit the inclusion of domestic consumption on the upper steps of the house heating rate. Particularly where master metering of such apartments can be arranged with the apartment operator, and either included in the rent or rebilled by him at his costs to the tenants, this type of heating installation is most economical and attractive to both operator and tenant. The absence of service troubles and expense with gas heating equipment, the individual apartment temperature regulation obtained, and the relatively low initial cost of gas equipment makes such a development an unusually attractive one.

The Flow of Air and Natural Gas Through Porous Media

A study of the flow of air and natural gas through porous media, a factor of great practical importance to oil and gas operators, has been made by the Bureau of Mines, United States Department of the Interior. The results are discussed in a report, Technical Paper 592, *Flow of Air and Natural Gas Through Porous Media*, by T. W. Johnson and D. B. Taliaferro, Jr.

In dealing with fluid flow through oil and gas reservoir sands, the permeability of porous media is perhaps the most significant factor and the one that recently has received a great deal of study, state the authors. Most investigators have considered only straight-line (viscous) flow in which all particles move parallel to the walls of the flow channel at relatively low velocities. However, the exact type of flow that takes place in an oil or gas reservoir has yet to be proved.

In the investigation made by the Bureau of Mines, flow relationships have been studied over a wide range of flow rates with air and natural gas flowing through a variety of unconsolidated sands, lead shot and several hundred specimens of consolidated sandstone and limestone taken from oil and gas-producing formations. On test specimens 1½ in. long, the differential pressure across the specimen was varied from 3 in. of water pressure to 800 lbs. per sq. in., so that flow conditions included straight-line, transitional and turbulent flows.

An empirical flow formula has been developed by bureau engineers to cover the entire range of flow conditions covered in their investigation. The terms in this formula are such that at low rates of flow the value of one term is almost nil and may be neglected, leaving a formula equivalent to Darcy's law for straight-line flow; but with increasing velocities this term decreases while a second term increases until, at high velocities, the first term approaches nil and may be neglected and the remaining formula is similar to the usual turbulent-flow formulae. For intermediate flow rates or transitional flow all terms in the equation are significant.

In this report the authors not only describe the equipment used in making high-pressure flow tests but also describe in detail the equipment and methods used in making routine permeability determinations. A feature of the report that should be particularly helpful to any engineer setting up equipment to make permeability determinations are the figures showing the construction of the specimen holder, core bits, orifice meters and other auxiliary equipment.

In the appendix of the report, results are given for several hundred routine determinations for porosity and permeability on oil and gas-producing sands from 12 states. This tabulation includes the results on five continuous cores.

Technical Paper 592 may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 10 cents.

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McNally Appointed Manager

W. J. McNally of Skiatook, Okla., has been appointed manager of Interstate Gas Co., Harrisonville, Mo., to succeed G. V. Hassinger. Most of Mr. McNally's work will be in Harrisonville, where he will be assisted by Leo Oskins, superintendent.

Wisconsin Utilities Group Plans Gas Section Meeting

A TENTATIVE program for the convention of the Commercial and Technical Divisions of the Gas Section of the Wisconsin Utilities Association, Milwaukee, has been announced by the program planning committee. The convention is to be held March 13 and 14 at the Pfister Hotel in Milwaukee.

Bernard T. Franck, sales manager of Grand Rapids (Mich.) Gas Light Co. and regional C.P. director, has been suggested by Dale Remington of Wisconsin Public Service Corp., Green Bay, as the leading speaker for the joint session to discuss "How Companies Can Profit Most Out of the National C.P. Program." J. G. Schellenberg of Cribben & Sexton Co., Chicago, was also assigned to work on this part of the program.

Kathryn Waldron, Northern States Power Co., and A. A. Schuetz, Milwaukee (Wis.) Gas Light Co., have been assigned to secure speakers for the topics, "Sales and Service Coordination Through the Home Service Department," and "Development of Industrial Loads in Smaller Cities."

The meeting of the Commercial Division is to be devoted to cookery, refrigeration, and water heating. An essay contest on the subject of "Selling Modern Cookery," is to be a part of the program of this section. George M. Fitzgerald and C. A. Debell, Wisconsin Public Service Corp., Milwaukee, and D. C. Nicol of Nicol and Perry Co. are planning this meeting.

The Technical Division meeting is to be divided into round table conferences and a session addressed by speakers. E. C. Brenner of Milwaukee Gas Light Co. will present an address on "Gas Engine Power Compressors." Other speakers for this session are being arranged for by O. W. Barenscher of the Wisconsin Public Service Corp., and Frank Wilkinson of Northern States Power Co., Minneapolis.

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W. E. White, Commonwealth and Southern Engineer, Dies

Walter E. White, 52, assistant chief gas engineer of Commonwealth and Southern Corp., whose headquarters are at Wilmington, Del., died December 5 at Jackson, Mich. Mr. White had been in the general offices of Consumers Power Co., Jackson, a subsidiary company of the Commonwealth and Southern Corp., for the past 18 years. He was appointed assistant chief gas engineer of the holding company in 1930.

Mr. White began his public service career in 1907 with the Dayton (Ohio) Gas Light Co., and for several years was connected with public utilities in Ohio and Indiana.

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R. W. Ducker Is Oklahoma Natural Superintendent

R. W. Ducker, formerly chief engineer of the Oklahoma Natural Gas Co., Tulsa, Okla., has been promoted to general superintendent, succeeding L. A. Farmer who resigned recently to become president of the Northern Oklahoma Gas Co., Ponca City. Announcement of Mr. Ducker's appointment was made by Joseph Bowes, president of Oklahoma Natural.

Analyzing the Mass Market

(Continued from Page 16)

Applying our 6.5 per cent expenditure to this average $1740 annual family income, we find that this average family has $113 to spend a year for lighting, cooking, water heating, refrigeration, and space heating. Deducting $2.00 a month for the average family electric lighting monthly bill (the national average annual domestic electric service bill according to the E.E.I. report for the year ending September 1938 is $35.91 or 4.27¢ a kw. hr.), there remains $89 for the family's annual fuel and refrigeration requirements.

According to Table No. 2 if this average family is cooking with gas, we collect $25.20 for this service, leaving $63.80 available for water heating, refrigeration and space heating. Again referring to Table No. 2 and assuming that this average customer has some form of refrigeration—if it's ice it costs more and if it's electrical it costs so much, at least,—we deduct our average cost for gas refrigeration which is $17.28, leaving us $46.52 annually for water and space heating.

Previous Study

In a similar study made four years ago, but with a view to determining the necessary price per therm to get the gas house heating load in various income groups, the writer took his average family to be one living in a small frame bungalow using from five to six tons of soft coal at $6.00 per ton a year. A heating figure of $32.50 tallied very closely with the conditions existing in a typical middle western industrial center. If this figure is acceptable today, and it should be, and deducting it from $46.52, we have left $14.02 for water heating. To anticipate any furnace coil objections—one-fifth of the coal in the furnace to be charged to water heating—we will add $6.00 to the amount left for water heating, which gives us an average total of $20.02.

It is very obvious that such a customer cannot afford—it is not a question of whether he wants one or not or whether he should have one—he simply cannot afford normal automatic gas water heater service at present rates. With $1.66 a month, gas at 16.3¢ a therm would buy him 10 therms a month. Or to put it the other way, if the average usage of an automatic water heater is 20 therms a month, the gas company would have to sell him gas at 8.3¢ per therm to comply with this economic condition. Such a rate, under existing conditions, is impossible.

A Necessary Bargain

Our January Guest Editor, George A. Neal, president, the Sioux City Gas & Electric Co., said, "An analysis of all kinds of public service shows that the average domestic customer can spend $3.00 per month, but above this amount *he must have a bargain* if he is to concentrate his fuel purchase in any one service."

It is suggested that the foregoing analysis in manufactured gas load-building possibilities is of significant importance, and prompts a realignment of our load-building ideas. It is readily conceded that the central storage or instantaneous automatic gas water heater has no equal in supplying the finest kind of hot water service in the home. There are thousands of prospects who can afford to use it, still unsold, and there certainly should be no let-up on the intensity of our sales promotion in this direction. In fact, the situation demands that it be increased.

But, confronted with a condition where the majority of our customers cannot afford such a service, and on the principle that half a loaf is better than no bread, an auxiliary automatic gas hot water service, even if it adds only two therms a month to the bills of the lower income bracket customers, represents a 10 per cent increase over the average cooking bill. *This is important business.*

Can such a load be obtained? In the next article in this series, we will analyze the results obtained by some manufactured gas companies, who have used single-point automatic gas water heaters, and discuss their general possibilities in an industry where every added therm counts in these highly competitive days.

SALES Slants

Twelve Paths to Better Salesmanship in 1939

HOW can I be a better salesman in 1939 than I was in 1938?

That is the question a lot of men were asking themselves as they started the new year, and here is how one framed the answer:

"First, I am going to learn at least one new word every day. Words are the tools of my craft, the sharp cutting edges with which I can carve out sales. I must learn to handle them more facilely, make them keener, more incisive. If I see an unfamiliar word, I must learn its meaning, write it down, use it in a number of sentences until I have added it to my vocabulary.

"Second, I must force myself to tackle the toughest job first. Like so many others, I have a tendency to shirk the difficult task; to find excuses for not doing it now; to put it off in hope it will become less difficult or be taken off my hands altogether. I know I shall find it increasingly easier to handle the tough ones if I don't shrink from them. And what a lot it will add to my sales efficiency to have them behind me instead of in front of me!

"Third, I will set myself a sales quota. The aggressive salesman is not the one who is satisfied merely with whatever business comes his way in the ordinary course of a day. He is the one who starts out the day by saying to himself, 'I am going to write 20 contracts today.' Things seems to come to the person who wishes, provided he wishes earnestly and sincerely and often enough.

"Fourth, I am never going to admit defeat, either to myself or to anyone else. General Grant formed a habit in childhood of never turning back once he had set out on a journey or upon a course of action. He would never admit he was licked, and the record shows, in his Civil War campaigns, that he never was. It was his tenacity and bulldog determination never to turn back that brought Union victory. Similar practice upon my part I am convinced will produce similar results.

"Fifth, I will try to spend less than I earn. There is nothing that gives a man greater assurance or a deeper sense of security than having a little nest egg in the bank. If I have to drive myself to earn money with which to pay off bills, I am riding on my nerve—and for a fall. If I drive myself because it is fun to work, I will have the wherewithal to meet my obligations and more besides.

"Sixth, I will avoid trading on friendship. My firm and its product are identified in my customers' minds with me. It is my duty to my firm and to myself to make friends and keep friends. If favors must be asked, let the customer ask for them. For their is no surer way to lose friends, than to use them.

"Seventh, I will strive to look and feel successful. Appearances are nowhere near as deceitful as some people would have you believe. I have noticed that the most successful men, as a rule look successful. One cannot be confident without looking confident; one cannot be energetic without looking energetic. Chin up, shoulders squared, a straight look, a friendly smile, a spring in the step—those are the things that bespeak the fellow who is happy and successful in his job. And they are more convincing and persuasive than the smoothest sales talk ever evolved.

"Eighth, I will keep myself immaculate. A soiled shirt and a stubbly chin are probably good salesmanship for the man who sidles up to you in the street and asks you for a dime. You expect a panhandler to be dirty and unshaven. Won't I be put down in the same category if I allow myself to become slovenly in my dress.

"Ninth, I will make my own decisions. It is a good thing to listen to advice when it is offered, but the man who listens too much to the counsels of others loses his capacity to govern his own destiny. No one knows as much about me and my problems as I do myself, and consequently there is no one better qualified to solve them.

"Tenth, I will keep a bright outlook. For some reason the greater majority of people seem to prefer a dark view of things, even though most of us despise the crepehanger. I can make myself distinctive then by being the man who always sees the sunny side, always ready to laugh.

"Eleventh, I will practice analysis. When I have brought a deal to a successful conclusion, I will stop and figure out what I did that brought a sale. When I have lost an order, I will try to determine where I went wrong. I will analyze myself, my customers and my product. I will learn my own limitations, my capacities, and the limitations and capacities of my product.

"Twelfth, I will develop my imagination. Civilization, progress, security, health, happiness, knowledge, and comfort have all come to the human race because men dared to dream. If every generation was satisfied with what the preceding generation handed down, we would still be living in caves. As a salesman, I am a servant of progress. It is my job to understand human needs, desires and aspirations, and show men how they may be fulfilled."

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Mitchell is Vice-Chairman of Advertising Committee

Having recently been appointed a member of the committee in charge of the gas industry's national advertising program, George F. Mitchell, president of The Peoples Gas Light & Coke Co., Chicago, has been elected vice-chairman of the committee. The national advertising program is sponsored by more than 700 gas companies in the United States, and is cleared through the American Gas Association of New York, of which Mr. Mitchell is a director.

■ ■

Gas Service Co. Appliance Sales Set New Pace

The sales departments of The Gas Service Co., Kansas City, Mo., report that gross appliance sales and installations made in the month of December, 1938, exceed those made in any December since 1930. The total for December, 1938, was $283,520, which was $38,636 more than December, 1937.

Illinois Co. Holds Industrial, Commercial Sales Meeting

IN order to stimulate special interest in building the commercial and small industrial load during 1939 Public Service Co. of Northern Illinois on January 17 brought together its industrial and commercial gas engineers, division managers, division gas superintendents, division gas sales managers, superintendents from gas districts and other executives in the Blue Island gas headquarters for an all day discussion of the subject. H. P. Sedwick presided and the following program was presented: "Selling the Bakery Load," H. R. Sorenson, "Volume Water Heating With Gas," H. F. Hammond, "The Modern Gas Commercial Kitchen," F. J. Tinney, "The Counter Appliance Field for Commercial Gas Sales," V. A. Hodges, "A Preview of Gas Air Conditioning Developments," D. V. Meiller, Round Table Discussion of Commercial Gas Sales Problems led by C. F. Henness.

Luncheon was served midway of the meeting, following which C. W. Bradley, vice president of the company, addressed the 50 men present.

In the afternoon W. E. Land spoke on "The Field for the Small Gas-Fired Boiler," P. W. Hay upon, "Selling the Miscellaneous Industrial Gas Load," E. Roth on the subject of "Industrial Air Conditioning," and J. E. Dare upon "Industrial Baking and Drying Operations." The program closed with a round table discussion of Sales Problems connected with Small Industrial Loads, led by O. E. Fry.

■ ■

Oklahoma Appliance Sales Show Increase in 1938

A survey recently made by the Oklahoma Natural Gas Co., among gas appliance dealers in its territory, indicates better business in appliance sales during 1938 than for the previous year when general business conditions were better.

The survey, which necessarily did not include all dealers but the principal ones in the 40 or more communities served by the company, showed sales of gas appliances for 1937 to be 52,827, compared with sales of 53,242 gas appliances during 1938. This increase is attributed in part to more intensive gas utility appliance promotional campaigns conducted in cooperation with drives made by appliance dealers.

All the appliances were sold by dealers, since utility companies cannot engage in appliance merchandising under Oklahoma laws.

■ ■

A. G. A. Booklet Reviews Domestic Sales Course

A new booklet, *Opportunity, 1939 Model*, has been issued by the American Gas Association to enable sales managers to give salesmen a quick preview of the A. G. A. course, "Selling Residential Gas Today," which commenced the latter part of November. Although the stock of booklets is limited, they are being offered to the first hundred companies who apply for copies to distribute to their salesmen. Inquiries should be addressed to association headquarters, 420 Lexington Avenue, New York City.

Members of the new 1939 A.G.A. Refrigeration Committee see model of "The Flying Cloud," famous American clipper ship, which is to be this year's trophy for gas company winners in the "Man the Sales" contest running from March 1 through July.

A. G. A. Refrigeration Group Plans 1939 Campaign

AMERICAN gas utilities and the thousands of sales employees of such companies will compete for cash awards amounting to $30,000 in the 1939 gas refrigerator sales campaign, to be conducted from March 1 to July 31, according to an announcement made by R. J. Rutherford, chairman of the American Gas Association Refrigeration Committee at the committee's headquarters in the Graybar Building, New York City. Mr. Rutherford is vice-president of the Worcester (Mass.) Gas Light Co.

Plans for the drive were discussed at the first meeting of the committee held in New York on January 12 in the offices of the American Gas Association. As in previous years, the contest will be conducted by the Refrigeration Committee and sponsored by Servel, Inc., through the Association of Gas Appliance and Equipment Manufacturers.

Gas refrigerator selling during the 1939 campaign will have three main objectives, according to Mr. Rutherford. These are: first, the replacing of outmoded ice-boxes, the average of which is estimated to be one in every other American home; second, the placing of gas refrigerators in new apartments and new dwellings, and third, the placing of gas refrigerators in homes where mechanical refrigerators have become obsolete.

The name chosen for the contest is "Man the Sales" and the trophies will be models of the famous clipper ship "The Flying Cloud" which sailed the Seven Seas in the middle of the last century. The trophy was selected as a symbol of successful salesmanship.

The "Man the Sales" or "The Flying Cloud" idea was created and developed by H. S. Boyle, promotion manager of Servel, Inc.

Members of the Refrigeration Committee in the picture above are: *front row*, sitting (left to right), J. W. West, Jr., secretary of the committee; H. C. Porter, new business manager, Kansas City Gas Co.; R. J. Rutherford, vice-president, Worcester Gas Light Co., chairman of the committee; Louis Ruthenburg, president of Servel, Inc., a guest of the committee at the meeting; A. J. Maloney, retail sales manager, Washington Gas Light Co., Washington, D. C.

Back row, standing (left to right), E. G. Peabody, Citizens Gas and Coke Utility, Indianapolis, Ind.; E. E. Linburg, manager of gas division, Metropolitan Edison Co., Easton, Pa.; O. J. Haagen, appliance sales manager, Ohio Fuel Gas Co., Columbus; H. S. Boyle, promotion manager, Servel, Inc.; H. D. Valentine, Peoples Gas Light and Coke Co., Chicago, Ill.; J. A. Sackett, sales manager, Kings County Lighting Co., Brooklyn, N. Y.; E. J. Boyer, sales manager, Minneapolis Gas Light Co., and F. E. Sellman, representing the Association of Gas Appliance and Equipment Manufacturers.

A. G. A. E. M. Starts National Sales Promotion Campaign

TO effectively dramatize the benefits of automatic gas water heating, the Association of Gas Appliance and Equipment Manufacturers launched in January a nationwide sales promotion campaign to extend throughout the year, it was announced by H. N. Ramsey, chairman of the Association's sales promotion committee. Enlisting the support of gas company executives and employees, dealers, builders and architects, the promotional project will be aimed at creating greater public demand for gas water heating through more adequate sales presentations and more informed public contacts.

H. N. RAMSEY

Gas Companies are urged to undertake greater local advertising and other promotion. Suggested newspaper advertisements, bill enclosures, mailing pieces, window displays, showroom banners, car-cards and large posters are included in the sales promotional material made available to the local companies. The elements of health, beauty and convenience will be featured in the campaign which will stress gas water heating as the "24 hour servant" that furnishes hot water to the average home 150 times a day.

Twenty-eight thousand retail plumber dealers will receive promotional plans built around the profits to be derived from water heater sales and installations. They, too, will be urged to conduct local advertising endeavors and will be supplied with material to assist them in such undertakings. Architects and builders will receive an up-to-date "Architects Manual on Gas Water Heating," prepared by a well-known architect.

As a key part of their 1939 program the A.G.A.E.M. will conduct two prize essay contests, one for gas company executives and employees and the other for retail dealers. Prizes for the two competitions will be duplicated. The first prize will be $500; the second $250; the third $150, and the fourth prize $100. The essay contests will close April 1 and the awards will be announced May 1.

The subject for the gas company contest will be "The Value of the Water Heating Load and How It May Be Secured." The dealers will write on "What the Promotion of Automatic Gas Water Heaters has Done for My Business." There are no limitations as to the number of words a contestant may use.

■ ■

Southern Counties Co. Holds Annual Sales Banquet

For the 28th consecutive time 125 officers, directors and employes of Southern Counties Gas Co. last month attended an annual sales dinner at company headquarters, 810 South Flower street, Los Angeles. Appliance sales for 1938 totaled $907,760.00.

Principal address of the evening was delivered by President F. S. Wade, who summarized the sales activities.

Other speakers were Norman R. McKee, vice president in charge of sales, who outlined the company's sales promotion and new business policy for the coming year, and A. F. Bridge, vice president in charge of operations, who spoke on the service rendered by the operating department during the year. Clyde H. Potter, commercial manager, acted as general chairman and presented the speakers. Among the guests were R. A. Hornby, vice president of Pacific Lighting Corp., San Francisco, and Clifford Johnstone, managing director of Pacific Coast Gas Association.

■ ■

Midwest Industrial Sales Council Holds Meeting

The annual meeting of the Midwest Industrial Gas Sales Council of the American Gas Association was held January 27 at the Palmer House, Chicago. In addition to a business meeting and round table discussions, papers were presented by the following speakers:

Nelson R. Gorsuch, Citizens Gas and Coke Utility, Indianapolis, Ind.; Raymond W. Fenton, Peoples Gas Light and Coke Co., Chicago; C. J. Levey, National Machine Works, Chicago; Paul Derringer, Surface Combustion Co., Chicago.

■ ■

Pittsburg Water Heater Formulates Sales Plan

AS a part of its contribution to the 1939 national automatic water heater sales campaign, the Pittsburg Water Heater Corp., Pittsburgh, Pa., has announced a new educational and sales promotional plan, available to all gas companies.

According to Robert C. Hill, general sales manager, the Pittsburgh "eye appeal" campaign is designed to furnish a local automatic water heater sales campaign, complete in every detail. The plan consists of three main sections. The "Sales Maker" is a portable visualiser in a cowhide leather portfolio, and consists of 30 colored illustrated pages for salesmen to use in presenting the benefits and need for automatic hot water service in the home. The "Sales Maker" also includes a survey sheet and a thermometer to dramatize the need for automatically gas heated water.

The "Sales Planner" is for supervisory and executive use. It outlines in detail a salesman's training course and suggests a routine to keep supervisory and sales records in the field.

The "Sales Finder" section includes a series of newspaper mats, bill enclosures and direct-by-mail folders, all keyed to a central theme and designed to stimulate public interest and give maximum help to the salesmen.

While much of this material is free, Mr. Hill states that where there is a charge, it is nominal and on a cooperative basis, making it available to the user at a far lower cost than it could be prepared and obtained locally in similar quantities.

■ ■

B. C. Electric Outlines Sales Plans for 1939

The 1939 sales plans, objectives and policies of the British Columbia Electric Railway Co., Ltd., Vancouver, B. C., are outlined in two new booklets published recently. *Class of '39 Syllabus*, sets forth the objectives for each branch of the industry.

The company's gas service objectives for 1939 include the sale of $102,365.00 of appliances and equipment; the rental of 1200 storage water heaters; $86,080.00 of new and retained annual revenue; $49,500.00 dealer appliance sales; and $16,500.00 of new and retained revenue from dealer sales.

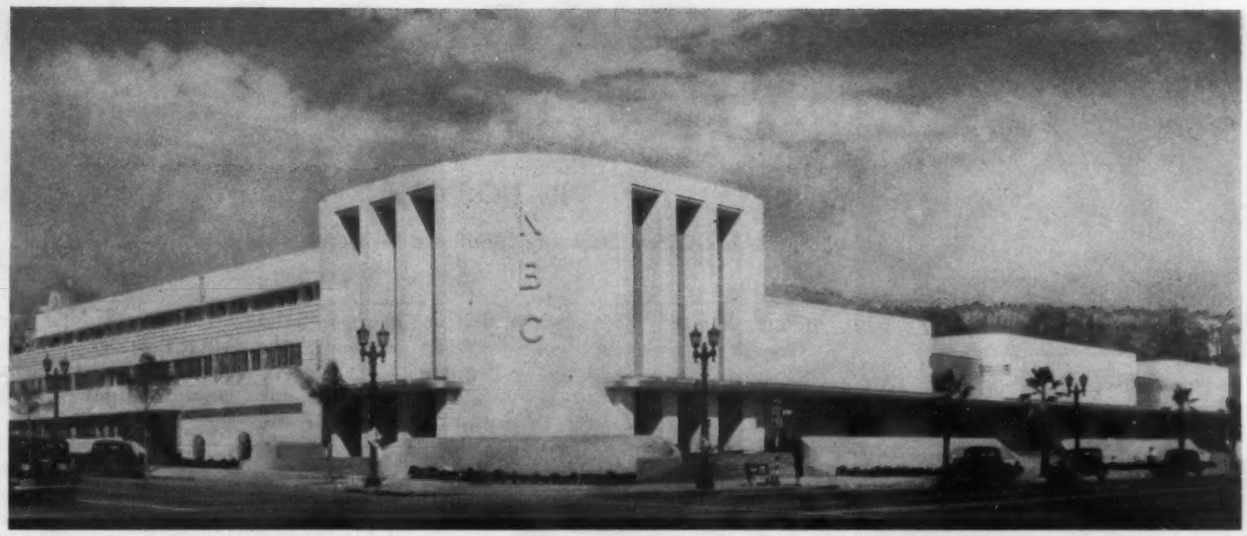
The *1939 Retail Dealers' Cooperative Sales Plan* is an outline of the standardized policies for dealers throughout the British Columbia Electric territory. Such problems as advertising allowances, dealer reports, installation allowances, prospects, prospect bonuses, and trade-in plans are dealt with in the 19-page booklet.

■ ■

Texas Gas Utilities Seeks To Export Natural Gas

The Federal Power Commission in Washington, D. C., on February 6 will hear the application of the Texas Gas Utilities Co., Del Rio, Texas, for authority to continue to export natural gas from Eagle Pass, Texas, to purchasers in Piedras Negras, Coahuila, Mexico. Temporary authorization to export the gas was granted the company December 20, 1938, for a period of 90 days. The gas is delivered to the purchasers on the American side of the international boundary.

The Texas company states in its application that the natural gas to be exported represents surplus production above an ample supply to serve existing and accessible markets in Texas, and that the exportation is necessary for the continuation of the Mexican industries served.



National Broadcasting Company's new Hollywood Radio City rises gracefully into the semi-tropical California sky in the heart of the world's film capital.

National Broadcasting Co.'s Hollywood Studio is Air Conditioned by Natural Gas

OF PARTICULAR interest to the gas industry is "Hollywood Radio City," ultra-modern new National Broadcasting Co. studio completed in October, on the corner of Vine Street and Sunset Boulevard in Hollywood. All of the most advanced developments in broadcasting engineering are incorporated in the design of this studio, and it is described as "the ideal plant for broadcasting." Natural gas plays its part in the air conditioning system, which was designed specially for this type of building.

Since the entire building is under accurate thermostatic control, the steam requirements change considerably from day to day and from hour to hour in accordance with outside temperature. For this reason, natural gas, with its great flexibility, was selected as a fuel which could most perfectly meet these wide fluctuations in steam demand. The installation supplies two low pressure fire box steel boilers, each having a capacity of 9500 sq. ft. of steam radiation. The boilers are fired with vertical fireclay tube and cap type gas burners, installed in a horizontal plane in the position normally occupied by the grates.

Other technical features of the boiler installation include the control apparatus on each boiler, which consists of a gas valve and secondary air inlet louvres, both controlled by a very sensitive diaphram, which is operated by steam pressure. Both gas and secondary air are throttled from full open fire to a set minimum fire as the steam requirement decreases. If the demand falls below this set minimum fire, the valve snaps to the close position, thus preventing any back fire in the mixers. Thermocouple type safety pilots and low water cut-off also operate through the same control valve to protect the boiler against pilot failure or lack of water.

The air conditioning system is divided into nine units, which are subdivided into a total of 32 zones, circulating more than 150,000 cu. ft. of air per minute. An average temperature of 72° F. and 45 per cent relative humidity is automatically maintained throughout the year by means of a pneumatic control system. The air is cooled or heated, and moisture added or subtracted, as called for by outside conditions.

Cooling is accomplished by passing clean filtered air over cooling coils through which cold water is circulated. Dehumidification takes place at the same time if the outside humidity is too high. The cold water is pumped from an 85,000-gal. storage tank by two pumps through a piping system to the cooling coils of the individual units. The water in the tank is chilled by a most modern freon refrigerating system, which automatically maintains the water at the proper temperature required to cool the studio.

Properly conditioned air is conveyed to the various studios and rooms through an elaborate duct system that has been designed to trap and prevent transmission and regeneration of noise. The air in all conditioned spaces is completely changed eight times an hour.

The new building is a three-story structure of functional design, 257 by 367 ft., built on one-half of a four and one-half acre plot. The portion of the building which fronts on Vine street houses the executive offices, program, production, publicity, artists' service, sales and other departments, which function behind the scenes of NBC broadcasts from Hollywood. The rest of the building is given over to eight broadcasting studios, four of which are auditorium studios built as individual units on a modified motion picture sound stage plan, but linked together by glass brick walls. The space between the auditoriums is utilized for corridors and artists' dressing rooms.

(Continued to Page 46)

So. Calif. Gas Co. Develops A New Type Pipe Locator

By NORMAN L. HOFF

Office Engineer, Southern California Gas Company

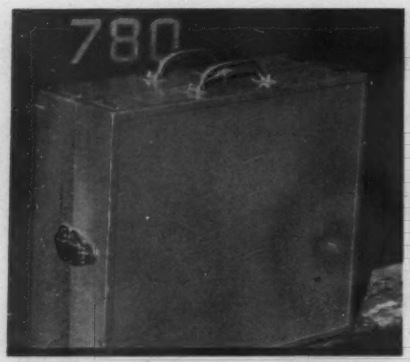


FIG. 1. The pipe locating set as it is carried by field crews.

FIG. 2. The pipe locator, showing the transmitter and receiver separated.

THE locating of pipes by radio dates back almost 25 years. The early sets were crude in design and uncertain in operation. Even the sets of today are far from being fully perfected. It would appear that such apparatus would have come a long way in 25 years, yet such is not actually the case. Possibly due largely to lack of acceptance by pipe line operators, the development of the radio pipe locator has been comparatively slow. Most of the significant developments have been made in the past 10 years, and only in the past few months has really satisfactory equipment been made available.

To the author's knowledge, the only type of set available prior to about 1925 was the old "magnetic" type, similar to that described in the original Carney patents. This set consisted of a transmitter and a receiver. The transmitter passed an interrupted current through the pipe, thus creating a magnetic field around it. The receiver merely detected the presence of this magnetic field. To do this the receiver coil was coupled directly to the ear phones, thus resulting in a signal that was comparatively weak, and it was quite impossible to locate pipes which were poor conductors, or were buried at any considerable depth. In about 1925 the Southern California Gas Co. began experimenting with the idea of applying radio amplification to the receiving set. As a result of these experiments an apparatus was developed which was extremely powerful, and is still in wide use today. One of the principal drawbacks of this set was the necessity of obtaining two contacts, one at each end of the section of pipe to be located.

To overcome this difficulty further experiments were performed in December, 1930, which led to the development of the so-called "divining rod" principle. With this apparatus a steel electrode was driven into the ground in the general neighborhood of the pipe and one of the leads from the transmitter was connected to it, and the lead was then connected to some convenient point on the pipe. Thus the current was made to travel from the "divining rod" through the earth to the pipe in order to close the circuit. The loss of signal strength by doing this was compensated for by increased amplification. By using the "divining rod" and one contact to the pipe it then became possible, under favorable circumstances, to locate stubs, or short pipes running to a dead end.

It is perhaps natural that the next step should have been the elimination of the necessity for any contacts to the pipe. By about 1930 there were several manufacturers marketing treasure finders of the true radio type, but these sets at that time did not function as well as pipe finders. About four years ago, however, there appeared a pipe finder of the true radio type which was fairly satisfactory. With this set it was not necessary to have any contacts to the pipe to be located, and the locating of stubs was usually possible. Its only objectionable feature was its lack of power. If the pipe was unusually deep the signal was too weak to permit reliable locating.

About a year ago a Los Angeles mining man was persuaded by the company's engineers to adapt an ore-finding apparatus which he had patented, to the locating of metallic pipes. So successful were his efforts that the company has recently purchased more than 20 of his sets. Fig. 1 shows the complete set as it is carried by the field crews. The transmitter and receiver clamp face to face, forming a compact set, easily carried and taking up little

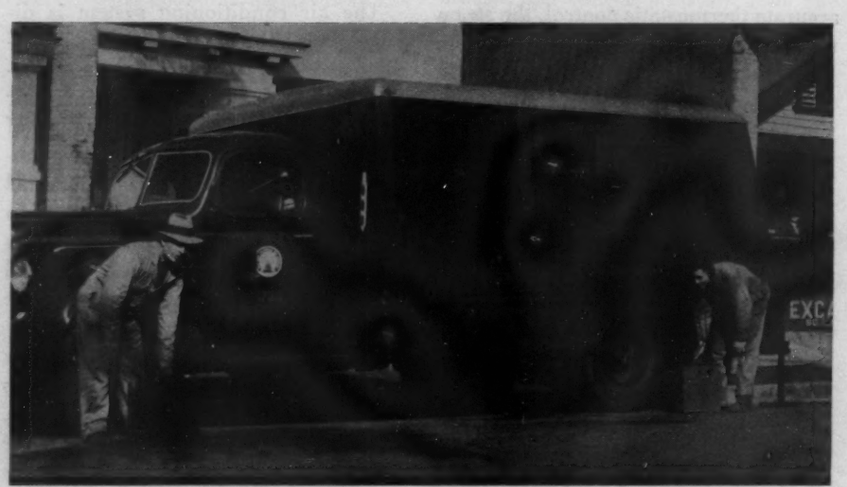


FIG. 3. In locating pipe the two units of the locator are separated some distance, one man carrying the receiver and another the transmitter.

Are you keeping up with the Joneses?

THE JONESES MOVE FAST. They keep up with the times. They're modern in mind, in appearance, in possessions. They dress smartly, drive a new car . . . replace worn-out house furnishings with new ones.

They're thinking of replacing their outdated automatic refrigerator this year.

If you're keeping up with the Joneses, you'll be there to see they get a Servel Electrolux this time. *Otherwise, you may not have another chance for years.*

But if they choose Servel Electrolux today, they'll not only add to your monthly gas load without requiring additional capital outlay on your part . . . they'll get a new experience in gas service.

There are lots of families like the Joneses . . . and it's well worth your while to keep up with all of them. It is estimated that more than a million automatic refrigerators will be replaced in 1939.

In getting your share of this business with Servel Electrolux, you'll not only profit from the immediate sale and increased gas load . . . you'll further establish the modernity of gas in your customers' minds, lead them to the use of "Gas for All Four Jobs."

The SERVEL ELECTROLUX Gas Refrigerator

Gas Refrigeration . . .

- PUBLICIZES MODERNITY OF GAS
- PROTECTS YOUR PRESENT GAS LOAD
- STIMULATES SALE OF OTHER GAS APPLIANCES
- BUILDS GAS LOAD WITHOUT EXTRA INVESTMENT
- PROMOTES "GAS FOR ALL FOUR JOBS"

WINS GOOD WILL FOR GAS AND GAS SERVICE

room on the truck. Fig. 2 shows the transmitter and receiver separated.

In locating a pipe by means of this apparatus, the two units are separated some distance, as shown in Fig. 3, one man carrying the receiver and another carrying the transmitter. If the pipe to be located is in the street the men stand about 50 ft. apart, and starting on one side of the street walk together to the opposite side of the street. As they pass over the pipe the receiver gives a strong "buzz," which by proper tuning can be narrowed to easily within the width of a shovel. Having once located the pipe, the transmitter is set on the ground over the pipe, its edges parallel with the axis of the pipe, and the operator of the receiver is then at liberty to trace out any part of the network within a radius of up to 500 ft. without further manipulation of the transmitter. Under favorable conditions, pipes have been located on the next parallel street with the transmitter placed in the middle of the block. Moreover, pipe up to a depth of 10 ft. has been easily located.

Where two men are available for its operation, the work of locating can be more quickly done, but a skilled operator can easily handle the set by himself. This, however, requires a different technique than that described, the transmitter being laid on its back on the lawn adjacent to the sidewalk, while the operator carries the receiver as before.

The Southern California Gas Co. has an operating history of almost 75 years. It is natural, therefore, that much of the older parts of the system cannot be located with confidence by reference to the records. Not only are pipe locators cheaper than looking for pipes with a pick and shovel, but are as fast and accurate as measuring off with a tape line a distance fo several hundred feet.

P. G. and E. Plans to Extend Natural Service to Lincoln

THE PACIFIC GAS AND ELECTRIC CO., San Francisco, Calif., is to begin construction of an 8-in., 36-mile gas main from Marysville to Lincoln, Calif., for the purpose of supplying natural gas to the Gladding-McBean Pottery in Lincoln. Distribution of the gas will also be made to all types of consumers in Lincoln, Wheatland, Roseville, and possibly Auburn, Grass Valley and Nevada City.

The new main, which is expected to cost more than $250,000, will be run from Marysville across the Yuba and Bear Rivers to Wheatland, then to Lincoln, and extended to make connection with the company's Rio Vista natural gas main at Roseville. The gas originates from the company's wells in Sutter Buttes.

In Grass Valley and Nevada City there has been a movement to replace the manufactured gas served at present with natural gas.

■ ■

Court Approves Sale of Oklahoma Utilities

The federal district court at Little Rock, Ark., has approved the sale of the Wagoner Gas Co., Wagoner, Okla., and the Cherokee Public Service Co., also at Wagoner, to Charles H. Albers, receiver for the Chicago Bank of Commerce, Chicago, Ill. The two Wagoner utilities were sold a short time ago in Little Rock with the assets of S. R. and M. B. Morgan, bankrupt utilities operators, by Lee Cazort, referee in bankruptcy.

The operating personnel of both utilities will remain the same.

■ ■

Sterling, Okla., Turns To Natural Gas Service

Having granted a franchise to Consolidated Gas Utilities Corp., Oklahoma City, Okla., early in December, the citizens of Sterling, Okla., are now being served natural gas, according to word received from E. C. Joullian, executive vice-president of the corporation. The gas is brought to Sterling by a 3½ mile, 3½ in. pipe line which connects with a main line running from Chickasha field to Lawton, Okla. From a master meter on the edge of town, the gas is piped to individual meters through a 3 in. pipe ¾ mile long; one mile of 2½ in. laterals are connected to the 3 in. line.

According to Mayor H. L. Tripp, 50 meters are being served at present. The distribution system constructed by the company was built to supply about 100 consumers. Paul S. Pierson, division manager of Consolidated Gas Utilities Corp., with headquarters at Lawton, is supervising the service.

■ ■

Gen. Charles Keller Named To Board of Service Corp.

William J. Hagenah, president, Public Utility Engineering and Service Corp., Chicago, has announced the election of General Charles Keller to the Utility's board of directors. General Keller fills a vacancy on the board caused by the resignation January 1 of Henry C. Cummins, who was elected vice-president in charge of operation, Northern States Power Co., Minneapolis, Minn.

General Keller has been identified with Public Utility Engineering and Service Corp. and its predecessor company since 1923 as an engineer on hydro-electric and other engineering projects.

■ ■

Natural Gas in St. Louis To Be Further Discussed

The Missouri Public Service Commission last month extended hearings on the feasibility of distributing straight natural gas in St. Louis. The question will be settled, if and when officials of the Laclede Gas Light Co., the distributing company, and the Mississippi River Fuel Corp., the transmitting company, can agree on a price for the natural gas which will enable the Laclede company to reduce its rates.

New England Association Holds January Meetings

THREE divisions of the New England Gas Association held meetings during January in Boston, Mass.: the Sales Division, January 13, at the Chamber of Commerce; the Operating Division, January 20, at the Chamber of Commerce; and the Industrial Division, January 27, at the Engineers Club.

Principal speakers at the Sales Division meeting were Arthur C. Babson, director of educational division, Babson's Statistical Organization, Inc.; E. R. Guyer, president, Association of Gas Appliance and Equipment Manufacturers; E. C. Sorby, sales promotion manager, Geo. D. Roper Corp., Rockford, Ill.

At the Operating Division meeting the speakers were C. W. Rainville, Salem (Mass.) Gas Light Co.; J. R. Beccia, Connecticut Light and Power Co., Hartford; W. H. Hanson, Providence (R. I.) Gas Co.; Marshall David, Boston (Mass.) Consolidated Gas Co.; Hall M. Henry, New England Gas and Electric Association, Cambridge, Mass.; R. J. Rutherford, vice-president, Worcester (Mass.) Gas Light Co.; W. S. Blauvelt, Hudson Valley Fuel Corp., Troy, N. Y.; D. M. Rugg, vice-president, Koppers Co., Pittsburgh, Pa.; E. L. Sweeney, Boston (Mass.) Consolidated Gas Co.

Speakers at the Industrial Division meeting were Willis G. Butterworth, vice-president, Joseph Middleby, Jr., Inc.; Roy E. Wright, assistant to vice-president, New England Gas and Electric Association, Cambridge, Mass.

■ ■

Northland Natural Granted Reed City, Mich., Franchise

The Northland Natural Gas Corp., Evart, Mich., has recently been granted a permit to introduce natural gas into Reed City, Mich., by the council of that city. According to R. A. Whitehead, president of the Northland company, it would be necessary to construct 15 miles of pipe line from the company's terminal at Evart, and about 10 miles of distribution mains in Reed City for domestic and industrial service. Mr. Whitehead estimates that approximately 400 meters would be serviced in the third year, and the whole proposed extention would cost nearly $40,000. Reed City has a population of 2,200.

The Northland Natural Gas company has been supplying natural gas to Barryton and Evart since November. A large consolidated school at Barryton, using 3,000 ft. of gas per hour, is one of the company's large customers.

■ ■

Atoka, Okla., Seeks Service From Southeastern Gas Co.

City officials of Atoka, Okla., have been conferring with S. J. Campbell of Oklahoma City, president of the Southeastern Gas Co., regarding natural gas service for Atoka. After a survey has been made to determine the possible number of customers for the service, a franchise will be requested, and if granted, construction of the system will be started.

The Southeastern Gas Co. recently began serving gas to the Oklahoma sub-prison, and also serves customers in Wardville, Okla.

BE SURE YOU SEE

WEDGEWOOD'S

NEW 1939 LINE of Gas Ranges!

•

FAR and AWAY THE MOST SENSATIONAL SERIES WE'VE EVER BUILT

•

Gas THE MODERN FUEL

THERE'S NOTHING LIKE GAS FOR
• BOILING
• BAKING
• FRYING
• ROASTING

Featuring

Certified Performance Ranges
Kitchen-Heater Models ★ Gas
Circulating Heater Models
Flush-to-Wall Construction

27 *different models!*

Certified Performance
SAVE TIME, FUEL AND FOOD

cp

Ranges

JAMES GRAHAM MFG. COMPANY
San Francisco • Los Angeles • Newark
Portland, Oregon

ALWAYS WEDGEWOOD QUALITY . . . MAKES FRIENDS FOR GAS

Gas THE MODERN FUEL

THE WOMAN'S *Viewpoint*

Our Woman of the Month

It was Doris H. Allen, Southern California Gas Co., who voiced a general request when she said she would like to see a complete and detailed "profile" of our only woman gas company president. So here she is, Mary E. Dillon, president, Brooklyn Borough Gas Co., complete with "profile." (Col. 3.)

Mary E. Dillon—born in New York City on June 15, 1885, the daughter of Philip J. and Ann Eliza (Wise) Dillon. Public School No. 41 and Erasmus Hall High School; went to work for the Brooklyn Borough Gas Co. in 1903; married Henry Farber in June, 1923. Acting general manager of the Brooklyn Borough Gas Co. from 1916 to 1924; vice president and general manager and director during 1924 and 1925; president and chairman of the board of directors since 1926.

Director (past vice president) of the Brooklyn Chamber of Commerce and of the Coney Island Chamber of Commerce; member of Local School Board District No. 39; member of Women's Arbitration Council; a director of the Park Association of New York City; a director of the Women's Exposition of Arts and Industries; member of the Woman's National Republican Club; member of Civitas; trustee and member of governing committee of Brooklyn Institute of Arts and Sciences; member of New York City World's Fair Commission; member of the Brooklyn Advisory Planning Board of the City Planning Commission; member of General Industrial Advisory Council.

Miss Dillon, commenting on our objectives on this page, has been kind enough to say:

> "Of course there is a place for women in the gas industry and, while I do not feel that I wish to give advice, may I make a suggestion? Some things seem natural to women—one of these is good housekeeping, another economizing. There are very few organizations that could not use these particular talents to advantage."

She Studies French

Mae S. Fletemeyer, Northern Indiana Public Service Co., noting our reference to her off-the-job studies at Northwestern University, writes that she still attends Northwestern. This year she is studying French to help her in her ventures into European literature. Incidentally, she adds apropos this page:

> "It is a thoroughly delightful page—newsy, interesting and enlightening. It has been called to the attention of our girls here in the office and a number of them have asked to be placed on the circulation list. I will also make it a special point to call the page to the attention of our home service advisors who will be very interested in it."

Thanks, Miss Fletemeyer, and we'll try not to disappoint you or your girls.

How Many?

Jessie McQueen, home service counsellor of the A.G.A., has told us that there are 20,000 women gainfully employed in the gas industry. I think she must have been thinking only of the utility gas girls at the time. Seeing that fine movie "Dramatic School" in which Luise Rainer in the opening scene is discovered as a girl worker in a Parisian gas meter manufacturing plant, set me wondering how many women there are making gas appliances and equipment for the gas companies and their cooperating dealers. I know girls work in gas meter factories in this country, and I have seen them working on the assembly lines in gas range plants. It would perhaps be impossible to count noses, but it would be most interesting to list the unusual —or should I say unsuspected—capacities in which they are employed in the gas industry? Please let me know of any cases within your ken, for I am sure the rest of us would love to learn of our versatility as gas gals.

Book of the Month

Several readers have written telling how they appreciate our thumbnail reviews of books interesting to career women. The one I have chosen this month is *Business Opportunities for the Home Economist* (McGraw - Hill Book Co. $2.50). It is a study made by the Institute of Women's Professional Relations under the direction of Chase Going Woodhouse, director, assisted by Anne Evans. This is the first book of its kind in this field and outlines more than its title suggests, going into such details as the need for home economists, the type of training required and the personal qualities best suited for the job. The book is essentially practical and covers far more phases than food preparation. There are other chapters on household equipment, textiles, photography, radio, journalism and related occupations.

I don't want to appear too insistent, but I can certainly recommend this as a "must" book.

MARY E. DILLON

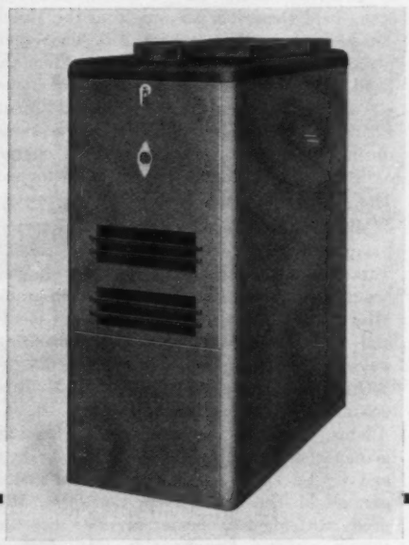
Futile Is Right

I agree with the *New York Herald-Tribune* editorial writer who calls a recent statement made by Gertrude Atherton, the famous novelist, a "pointless debate." To add to the seemingly endless battle of the sexes, Miss Atherton in a speech at Washington, D. C., stated that there never had been a woman genius. This is merely provocative and perhaps Miss Atherton's subtle way to feed fuel to the flames of an argument that contributes nothing to reasonable feminism or anything else that is constructive.

There have been many women geniuses. Among them can be counted Mme. Curie, Mary Casatt, Rosa Bonheur, Catherine the Great, Elizabeth Barrett Browning, the Brontes, Sarah Bernhardt, Elinor Duse, George Eliot, and Elinor of Aquitaine. But they were not geniuses solely because they were women. So what?

PAYNE'S NEW ZONEAIR MAKES HEATING HISTORY

Payne scores again! Now every conceivable function of a modern gas-fired furnace has been incorporated in one compact unit — the Payne ZONEAIR! It automatically heats, circulates, purifies, ventilates, and humidifies — and introduces, for the first time, true *zoned heating*. Zoned warmth is controlled warmth . . . where you want it! It replaces inefficient and bulky heating systems which, at prohibitive cost, so often yield uneven warmth . . . not enough for an entire house . . . too much when diverted to a single room.



Compact ZONEAIR units may be set up in batteries of two or more, each furnace operating independently and furnishing purified, healthful, circulating heat to separate suites or rooms at the exact temperature desired.

In the new Payne ZONEAIR not a single possible improvement has been overlooked. From every angle this new furnace which introduces a modern, perfected system of economical *zoned heating* sets a new, history making standard.

Now Check These Brilliant New Payne Engineering Accomplishments!

HEATING ELEMENT: **Streamlined design of heavy metal. All-welded. Maximum efficient heating surface.**

DRAFT DIVERTER: **Now completely enclosed within casing.**

BLOWER: **Long hour GE motor assures smoother operation. Especially made oversize fan wheel gives more efficient air delivery through unit.**

QUIET OPERATION: **Blower, motor, and all moving parts are mounted on rubber to eliminate vibration.**

OPTIONAL LUMINOUS FLAME BURNER, **exclusive with Payne, guarantees efficient combustion of *manufactured gas.***

TIME-O-MATIC CONTROL **automatically starts blower when desired furnace heat is reached. Eliminates lag between temperature and blower operation.**

SIMPLE INSTALLATION: **All wiring within the unit is low voltage. Polarized connections simplify control wiring.**

FILTER: **25% more filter area. Finest grade, spun glass filters.**

Write for further information.

ACCESSIBILITY: **Heating element, blower, blower motor, filter, control panel — every part may be quickly and easily removed from casing. Servicing time and cost are cut to a new low.**

BEAUTIFUL FINISH: **The ZONEAIR unit has a streamlined casing finished in sapphire blue and black krinkle enamel.**

SIZES: **Six sizes (60,000 to 200,000 B.T.U. input rating) cover every home heating requirement.**

Payne FURNACE & SUPPLY CO., INC.
BEVERLY HILLS • CALIFORNIA

THE IDEAL FUEL GAS

Consolidated Edison Elects First Woman Director

TWO new trustees recently elected by the Consolidated Edison Co. of New York, Inc., are Mrs. Kenneth B. Norton, Bronxville, N. Y., and Neal Dow Becker, president of the Intertype Corp., Brooklyn, N. Y. Mrs. Norton is one of the first women in the country to serve on the directorate of a major utility company. The two new trustees fill posts left vacant by the resignations of Lewis Gawtry and Louis M. Greer.

MRS. K. B. NORTON

Mrs. Norton has had wide experience in various women's organizations and has served on the board of directors of the Westchester Lighting Co., part of the Consolidated Edison system, for the past year and a half. During the World War she served as secretary to the draft board in New York City, and in the past few years has been president of the Westchester Federation of Women, president of the Women's Board of Lawrence Hospital (Bronxville), and a director of the village's Community Welfare Fund.

Mr. Becker is president of the Intertype Corp. of Brooklyn and chairman of Intertype, Ltd., London, both manufacturers of typesetting machinery. He is a director and member of the executive committee of the New York Dock Co., chairman of the executive committee of the National Industrial Conference Board, trustee of Cornell University, and a member of the Corporation of Polytechnic Institute of Brooklyn.

■ ■

Arizona Co. Announces Rate Cut With Novel Ad Series

When the Central Arizona Light and Power Co., Phoenix, experienced a recent rate cut, Don Willis, advertising manager, turned the blow by using the rate cut as the focal point of a series of novel advertisements. In one day space was used on all but two of the pages of the Phoenix *Republic and Gazette*. The company message was carried into every conceivable type of copy. The set of advertisements included copy for the comic section, financial, society, and sport pages, and amusement listings. In each instance, layout tied in with the type normally used for such advertising, but the message remained constant. In all 35 display and several classified insertions were used.

■ ■

Gas Service Co. to Revise Home Service Literature

The Gas Service Co., Kansas City, Mo., has placed Betty Boyle, home service director, in charge of revising the books and literature used by the home service department. The book *Aid to Cooking Perfection With Your Gas Range* will be called *Gas Cookery*, and will contain only plain recipes used every day by housewives. Also being revised are an oven canning book, and *Proper Use and Care of the Gas Range*, brought up to date to include C. P. ranges. Miss Boyle is also preparing new one-page programs of recipes to be used in connection with special cooking schools.

During the month of December Miss Boyle gave many demonstrations in Eldorado, Kan., and in the towns of Mr. Hope, Belle Plaine, Haven, Udall, Oxford, Mulvane, Cambridge, Atlanta, Dexter and Valley Center, all in Kansas.

■ ■

Kansas Companies Hold Home Service Conclave

JESSIE McQUEEN, home service counselor of the American Gas Association, was one of two featured speakers at a two-day meeting of the home service departments of The Gas Service Co., Kansas City, Mo., the Kansas City (Mo.) Gas Co., and the Wyandotte County Gas Co., Kansas City, Kan., held December 29 and 30 at the Hotel Muehlebach in Kansas City, Mo. The other principal speaker was Florence C. Plondke, head of the office of the department of home economics, National Livestock and Meat Board at Ames, Iowa. The various sessions during the two-day meeting were in charge of Betty Boyle, home service director of The Gas Service Co.

Miss McQueen spoke on new ways to improve customer relations by home service workers, particularly stressing new angles brought about by the C.P. range program. Miss Plondke discused various cuts of meats and methods of cooking them, emphasizing ways of preparing the less tender cuts.

Other talks were presented by F. M. Rosenkrans, new business manager, B. C. Adams, general manager, Ed Pfenning, manager of the Hutchinson, Kan., branch, and Cy C. Young, assistant business manager, all of The Gas Service Co.; Mrs. Mildred Rittenhouse, home service director, the Wyandotte County Gas Co.; Colleen Fowler, home service director, Kansas City Gas Co.

■ ■

Technical Volume Published By Air Heating Association

Winter Air Conditioning Forced Warm Air Heating is the title of a new 489-page book just published by National Warm Air Heating and Air Conditioning Association, Columbus, Ohio, and edited by S. Konzo, special research assistant professor in mechanical engineering, University of Illinois. The book is based primarily on results of research on the subject at the University of Illinois as published in the University of Illinois Engineering Experiment Station Bulletin No. 266, suplemented with data from other sources and with comment by the editor.

■ ■

DeKay Leaves LeMars Utility

W. R. DeKay, manager of the LeMars (Iowa) Gas Co., has resigned, effective February 1, to accept a position with the civil service at Washington, D. C. The LeMars utility is a subsidiary of the Great Lakes Utilities Corp. of Philadelphia, Pa. Mr. DeKay had been with the LeMars company for 10 years.

Commercial Section Plans Three Sales Conferences

PLANS of the Commercial Section of the American Gas Association for the regional gas sales conferences to be held in the southern - southwestern, mid - west and eastern natural gas districts during the months of February and March are rapidly being completed.

A. M. Spencer, Georgia Power Co., Columbus, Ga., is chairman of the committee in charge of the southern - southwestern meetings which will be held on the *S. S. Rotterdam* on Monday afternoon, March 20, and Thursday afternoon, March 23. Home service activities have been given a special place on the Thursday morning, March 23, general sessions meeting of the Southern Gas Association which sponsors the regional gas sales conference jointly with the American Gas Association.

The mid-west regional gas sales conference will be held under the chairmanship of L. W. Johnson, The Peoples Gas Light and Coke Co., Chicago, at the Stevens Hotel, Chicago, on February 9, 10 and 11. All regional and associate regional managers of the certified performance range program will attend a meeting of the domestic range committee at the Stevens Hotel on the day preceding the conference. Saturday morning, February 11, will be devoted to a home service meeting, followed by a luncheon concluding the conference.

The 1939 eastern natural gas regional sales conference will be held at the Roosevelt Hotel, Pittsburgh, Pa., on March 2 and 3, under the chairmanship of R. E. Williams, Binghamton Gas Works, Binghamton, N. Y.

Members of the association in regions covered by these conferences will shortly receive special notices giving the advance program of topics and speakers.

■ ■

Gas Turned Into Southern Union Tomball Field Line

Gas has recently been turned into the new 7-in., 22-mile pipe line constructed by the Southern Union Utilities Co., Dallas, Texas, from the Tomball field in Harris County, Texas, to the Belleville district lines at Prairie View, Texas. Construction of the line was made necessary by a constantly increasing load. It is estimated that the present daily capacity is sufficient to supply several times the existing demand.

Contractors for the construction of the line were Dixon and Horton of Longview, Texas, while details were handled by H. C. Frizzell, district manager of Southern Union. The Tomball field supply has an estimated life of at least 40 years.

■ ■

Cities Service Refinances

In order to retire its present outstanding first mortgage 5½ per cent and 6 per cent gold bonds, the Cities Service Gas Co., Bartlesville, Okla., has sold $35,000,000 first mortgage pipe line 3½ and 3¾ per cent bonds, maturing 1940-1954, to four large banks and two insurance companies. Redemption date of the gold bonds is February 28, 1939, but holders may redeem the bonds prior to that date.

★ When a customer says something like the above, compliments on your selling ability are in order. You sold something that so pleased the customer she gladly did your next sales job for you.

In spite of changing styles, housewives don't buy gas ranges or heaters every day. So insist on selling the best porcelain enameled model on your floor. If you do, customer satisfaction and more sales will result.

The *one* finish for a kitchen appliance which is endlessly durable, positively sanitary, scratch and fade proof, everlastingly beautiful, is porcelain enamel. And more and more appliance manufacturers are using LUSTERLITE enamels because they know them to be the standard of excellence for porcelain enamel finishes.

Remember: the more LUSTERLITE on the appliance you sell the more profit for you through customer satisfaction. Tell your supplier that you want the ranges and heaters you sell to carry the LUSTERLITE label. It is an added selling point for you—(a powerful one).

CHICAGO VITREOUS ENAMEL PRODUCT COMPANY
1405 South 55th Court
CICERO, ILLINOIS

LUSTERLITE *Porcelain* ENAMELS

Public Service Company of Northern Indiana effectively presents gas service for the four big jobs through this "all-gas" home, which proved a public attraction in Fort Wayne.

Northern Indiana Co. Turns on the Heat—Sells "17 out of 19" New Ft. Wayne Homes

"SEVENTEEN out of 19 have it!" No gas man can say "Oh Yeah!" when you tell him that means 17 of the 19 new homes built in the Pilgrim Home Colony at Fort Wayne, Ind., are heated with gas. Nor when it is pointed out that more than 350 home heating jobs have been added by the Northern Indiana Public Service Co. in the last 14 months.

Granted that the introduction of natural gas, which brought a reduction of one-third in home heating costs, gave impetus to the use of gas heat, the trend nevertheless is definitely to this only 100 per cent completely automatic fuel in this city. Fort Wayne is one of the leading cities of the 100,000-and-over population group and its insistence on things modern is illustrated by the fact that it frequently is chosen as a typical American city for national advertising test campaigns.

Thomas J. Kelly, division manager of the gas company, credits the All-Gas Home idea with much of the success of his home heating activities. The Northern Indiana marks each All-Gas Home, while it is under construction, with a sign stating that particular home uses gas for the four big jobs—and tells what they are.

The most recent All-Gas home supported by the utility is that shown above. It was designed and built for "Mr. and Mrs. Average American and their two children," is a six-room colonial type cottage, and is equipped with a C. P. gas range, gas refrigerator, gas water heater and, of course, gas home heating. Completed in December, it had been open only two days when it was sold. The purchaser agreed to keep it open to visitors for two weeks, and more than 5,000 braved inclement weather to go through it, attracted by a consistent campaign of small newspaper advertisements.

Cooperative Advertising

The largest advertisement emphasizes the "4 Big Jobs" as well as the All-Gas home and the work of the contractor-builder. It is a cooperative page, the cost being shared by the companies and individuals who supplied the material and worked on the home.

Reference was made to "17 out of 19" having "it" in Fort Wayne. In the Pilgrim Home Colony referred to heretofore, gas was specified for that percentage of the residences. While the All-Gas home shown in the picture was built to sell in the neighborhood of $7,500 and illustrated a widening of the market for home heating (to the person who felt it was too expensive for *him*) the homes in the Pilgrim addition are generally of more than $10,000 cost.

Hailed by the contractor as a new idea in home building, these homes named after women passengers on the Mayflower, are naturally of early American architecture, and are grouped together in a Class A residental neighborhood of which they form the nucleus. There eventually will be 50 of these homes, and Mr. Kelly anticipates again getting his "fair share" of home heating installations from that half hundred.

In addition to a heavy advertising schedule prepared for the last home heating season by the gas company's agency, Bozell & Jacobs, Inc., another factor in the growing acceptance of gas heat as the model method is the cooperation between the utility and

Twenty below or twenty above
COMFORT NEVER VARIES

The Accelerator Does It . . .

WHY let your customers worry along with an "almost" modern heating system when by the simple installation of one or more of the series of new M-H Controls they can enjoy clock-around winter comfort, not possible even to millionaires five years ago. For example, the new M-H Acratherm, with its exclusive Heat Accelerator "does things" to home heating which the best ordinary thermostat made cannot accomplish. The Accelerator actually irons out heating ups and downs, because of its uncanny ability to sense temperature changes before they occur. It so governs the operation of the Automatic Heating Burner that the temperature, which any family demands for comfort, never varies, regardless of outside weather. Dependable controls cost less than service. Depend upon controls bearing the M-H Symbol . . . Minneapolis-Honeywell Regulator Company, 2946 Fourth Avenue South, Minneapolis, Minn. Branches located in all principal cities.

MINNEAPOLIS-HONEYWELL *Control Systems*

BROWN INDUSTRIAL INSTRUMENTS
NATIONAL PNEUMATIC CONTROLS

A Pre-View of 1940!

MULTI-TEMP TOP BURNERS

★

FLEX-HEET TOP BURNERS

★

EVEN-TEMP OVENS

★

VISA-TONE OVEN HEAT CONTROLS

★

FLA-VER-SEAL BROILERS

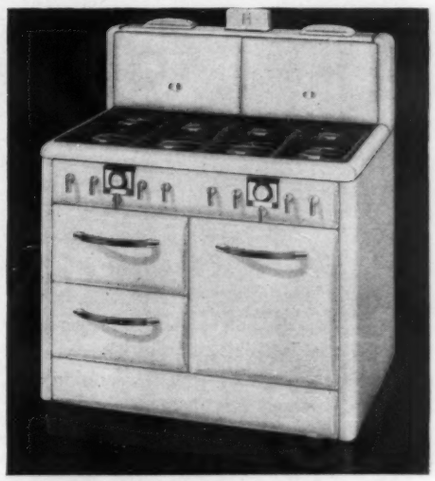
75TH YEAR

The new 1939 DETROIT JEWEL and GARLAND Gas Ranges are more than worthy of their important position signalizing seventy-five years of range manufacture. Check these ultra-modern refinements in design: flush cooking tops; high wall-protecting back-guards; new round-cornered chrome-finished burner pans; new counter-balanced folding cover tops; automatic top lighters; counter-balanced heat-retaining oven doors; automatic safety oven lighters; faster, more economical oven burners; new EVEN-TEMP pastry ovens; roller bearing utility drawers; enclosed recessed bases; and new time-reminders, lamps, and condiment sets.

DETROIT JEWEL

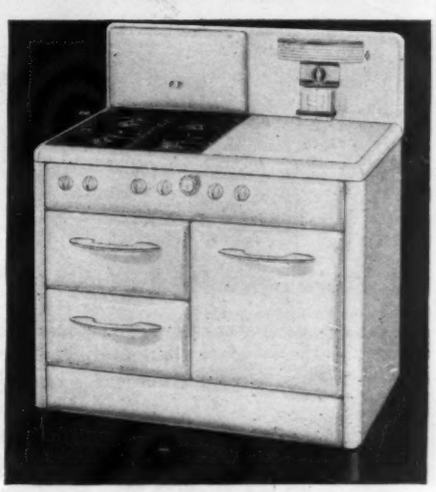
These Brilliantly New 1939 DETROIT JEWEL and GARLAND Ranges Predict the trend of the Industry for *Years to Come!*

You Can take Advantage of these Powerful *Sales Closing Features NOW!*



THE NEW 1939 DETROIT JEWEL and GARLAND Ranges combine sparkling beauty with history-making advancements that place them easily a year ahead in basic design and in specific features. They give you an inspiring picture of the gas range design of the future.

Here's everything you need to make 1939 your greatest gas range year! Amazing new speed and fuel economy! A new oven that out-performs even the famous baking ability of DETROIT JEWEL and Garland Ranges of the past! A new broiler that sears both sides at one time! New top burners that provide for genuine waterless cooking. New, completely automatic oven control. And —a long list of design refinements that makes prospects WANT these ranges.



There are DETROIT JEWEL and GARLAND models to satisfy the exact requirements of every prospect—at prices which make theses ranges obviously the best buy when compared with others.

Send for Catalog and Complete Information

The DETROIT JEWEL and GARLAND Ranges are ready for immediate delivery. Send now for the 1939 Diamond Jubilee catalog and complete information about these great profit-making lines.

DETROIT MICHIGAN STOVE CO. ★ DETROIT

and GARLAND *Gas Ranges*

heating contractors in the community. The heating contractors are on their toes in Fort Wayne, and with the company mentioning them in all advertising and making free estimates and surveys for the contractor's customers, the number of jobs sold through that channel has been more than satisfactory, in Mr. Kelly's opinion.

One of the innovations that has been introduced in Fort Wayne, incidentally, may be of interest to other gas utilities operating in competitive territory. The city of Fort Wayne is served by a municipal light plant and a private electric company. The Northern Indiana Public Service Co. of course serves a vast majority of the homes in the community with gas for cooking . . . and incidentally frequently calls the attention of the citizenry to the fact that "more than 16,000,000 American women prefer gas for cooking."

Because it has been known through its more than 80 years of local activity as "the gas company," that signature is used on all advertising, with the corporate name of the utility appearing underneath the larger-lettered identifying signature.

The experience of the Northern Indiana Public Service Co. has shown considerable interest in All-Gas Homes, because of the steadily increasing acceptance of gas as the ideal fuel for cooking, refrigeration, water heating and home heating.

■ ■

H. R. Basford Presents Skeet Trophy to P.C.G.A.

Harold R. Basford of the H. R. Basford Company has presented to the Pacific Coast Gas Association, a perpetual skeet trophy to be competed for each year at the annual convention by members interested in this sport. The trophy is a beautifully decorated silver plaque.

It is now held by skeet shooters of the Coast Counties Gas and Electric Co. who won it at the association's first skeet tournament held in conjunction with the Santa Barbara convention.

Charles Grunsky and Charles Kirksey represented the Coast Counties at Santa Barbara.

■ ■

Texas Cities Plans Building

The Texas Cities Gas Co., Dallas, Texas, is preparing the plans and specifications for a new office building in Galveston as a major portion of its 1939 development program. The building will be a one story modern structure, and it is expected that it will be completed and occupied by July 1, according to P. E. Nicholls, manager for the company's Galveston district.

The Dash Pot or Sensitizer

For delivery pressures not exceeding 8 ounces, if a regulator of the single-diaphragm type does not control with sufficient exactness, a Dash Pot or Sensitizer is sometimes added. The Dash Pot, attached to the lever of the regulator, increases its power very much.

Full particulars will be found in Bulletin 2903.

The CHAPLIN-FULTON MANUFACTURING CO.
28-40 Penn Ave. Pittsburgh, Pa.

Transmitting High Pressure Gas for Oil Well Lifting

(Continued from Page 19)

pressure natural gas the Hunt Companies have demonstrated a new market for gas fields in the vicinity of oil fields, all of which sooner or later must abandon natural flow and rely upon some sort of "assisted" production such as pumping or gas lift. They have also demonstrated satisfactorily the handling of gas under high initial pressures, and attained a high degree of success in its distribution throughout the leases now served by this novel method of producing crude.

Since the Chapel Hill well, serving as the source of this naturally "compressed" gas, is the first one drilled on the extensive structure geologically located by the Hunt interests, further development of this natural gas reservoir will be continued as the demand or market for the gas in the East Texas oil field is extended through spreading of the distribution end of the pipe line.

■ ■

Northern Natural Withdraws Objection to Pipe Project

The Northern Natural Gas Co., Omaha, Neb., has withdrawn its objections to the construction by the Kansas Pipe Line and Gas Co., Salina, Kan., of a $21,470,000 gas line which would serve approximately 128 communities. Application for a permit was made some time ago to the federal power commission by the Kansas Co. Northern Natural Gas Co. had objected because it had been informed that the proposed project would enter cities and towns served by its gas. A subsequent filing of the Kansas Pipe Line and Gas Co.'s application showed that the territory served by Northern would not be invaded.

■ ■

Gas Service Co. Managers Switched to New Posts

Alex Laney, formerly with the Gas Service Co. of Bartlesville, Okla., has been transferred to Pawhuska, Okla., to become manager of the Gas Service Co. there. He succeeds Charles Manney who has been appointed manager of the company at Ft. Scott, Kan.

Mr. Laney has been with the company since 1930, serving in both the Bartlesville and Pawhuska offices during that time.

■ ■

Robb Quinby is Statistician For Brooklyn Union Co.

Robb Quinby of the Brooklyn Union Gas Co., Brooklyn, N. Y., has been appointed statistician for the company. Mr. Quinby has been with the company since June, 1931. Since 1936 he had served as assistant to John I. Blanchfield, assistant vice-president. He is a graduate of Beloit College.

Howle Economical Gas Heaters* for Small Homes and Flats

Howle Gas Fired Heaters initiate a new field of selling endeavor in a market that is economy yet luxury conscious. Now small homes and flats can have the comfort and convenience of even, circulating radiant heat, day and night, **at amazingly low cost.**

Think of the selling points: clean, no dirt, no work, no coal to shovel, no ashes to lug. Howle Heaters take the low cost heating rate and you don't have to pay until after the fuel is used.

Check the construction features below. See why Howle Gas Fired Heaters are gaining such rapid consumer preference.

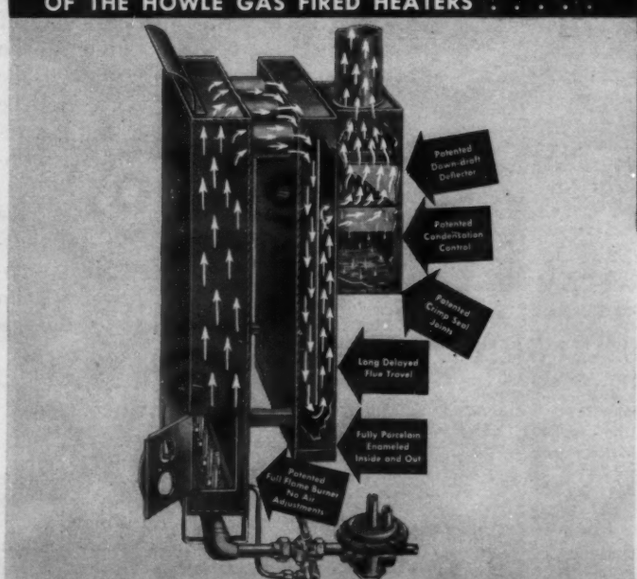
***With or without automatic control**

IN THREE EFFICIENT ATTRACTIVE SIZES

Vastly improved Armco enameling stock iron construction, full vitreous porcelain enameled throughout and corrosion proof (even against salt atmospheres). Finished in blended wood tones to harmonize with room furnishings.

MODEL	INPUT RATING	DIMENSIONS
A-30	30,000 B.T.U's	18x18x41
A-45	45,000 B.T.U's	18x22x44
A-60	58,000 B.T.U's	18x26x47

LOOK AT THE INNER UNIT CONSTRUCTION OF THE HOWLE GAS FIRED HEATERS . . . . .


Patented Down-draft Deflector
Patented Condensation Control
Patented Cross Seal Joints
Long Delayed Flue Travel
Fully Porcelain Enameled Inside and Out
Patented Full Flame Burner No Air Adjustments

GAS ACTUATED CONTROL with all the inherent advantages of electric control, plus built in safety pilot protection. The control valve and safety pilot are both contained within the jacket of the heater, away from any possible damage or danger of tampering by children.

WRITE FOR ILLUSTRATED FOLDER & COMPLETE INFORMATION

THE HOWLE COMPANY 335 SOUTH WESTERN AVENUE CHICAGO ILLINOIS

The "All-American" home, a part of the industry's exhibit at the New York World's Fair, will combine traditions of the past with the comforts of "tomorrow's" method of living.

"All American" Gas Home Is Feature of N. Y. Fair

AN "ALL-AMERICAN" home to show visitors to the New York World's Fair how the typical American family may live "tomorrow," will be built by Gas Exhibits, Inc. as part of the industry's spectacular "Court of Flame" exhibit at the Fair. It will be done in cooperation with *Good Housekeeping* Magazine which will furnish and decorate it under the direction of Helen Koues, director of Good Housekeeping Studio.

In announcing the project, Hugh H. Cuthrell, president of Gas Exhibits, Inc., said: "The architectural inspiration for the house comes from a famous and thoroughly American prototype—an historic house outside of Baltimore, Md., called 'Homewood.' This famous post-revolutionary house was built by Charles Carroll, signer of the Declaration of Independence."

Planned as a feature of the gas industry's participation in the Fair, the house is being developed as a dramatic demonstration of what a house can be when the house heating, air-conditioning, water heating, refrigeration, cooking and laundry equipment are all powered by gas. It has been designed with the moderate income group in mind.

The "All-American" home will be of white stucco, with roof, shutters and doorway in color. Its pillared portico will be "the type already familiar to Americans everywhere as the doorway to the White House and the homes of Washington and Jefferson." On one story, it will have a dining room, living room, kitchen, four bedrooms, three baths and an extra lavatory, all with extra sized windows to conform to the modern demand for light and air. The kitchen pantry and utility room have been designed to embody all the best techniques in home management.

An all-purpose room adjoining the kitchen will house the modern gas heating, air-conditioning and laundry equipment. The kitchen itself, together with a pantry, will provide plenty of working space while including all the step-and-space-saving devices the moderns have learned so well. The newest types of gas range and gas refrigerator will take care of food problems.

The collaborating architects were Dwight James Baum, noted architectural consultant for *Good Housekeeping*, and Skidmore and Owings, John Moss Associate, architects for the gas industry's exhibit group.

■ ■

Wisconsin Co. Announces Personnel Changes

The Wisconsin Gas and Electric Co., Racine, Wis., has named D. G. Evans vice-president to succeed R. E. Moody, who is now executive vice-president. S. B. Sherman succeeds Mr. Evans as general manager, and J. Tyvand takes Mr. Sherman's place as chief engineer. From 1919 until a year ago, when he was named chief engineer, Mr. Sherman was gas superintendent.

General Controls Gas-Actuated Space Heater Control

NO ELECTRICITY USED. Efficient pilot burner generator supplies current for positive valve operation. No other source of current necessary. Ask for catalog.

NOTHING ELSE LIKE IT

Type B-60-4. Self-operated, close differential, automatic pilot burner, gas-actuated control—with all the inherent advantages of electric control. Integral thermostat; assures desired room temperature.

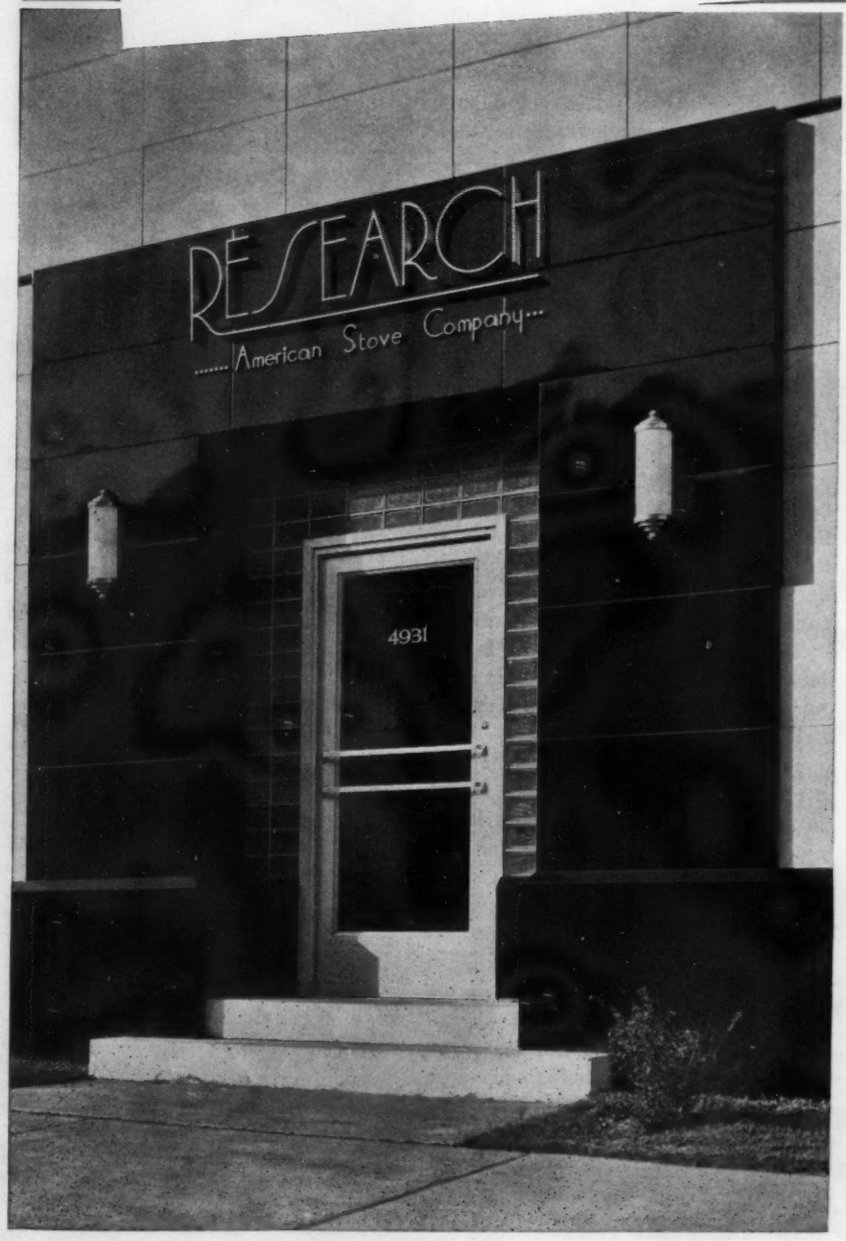
GENERAL CONTROLS

CHICAGO, ILL. . . . . 450 E. Ohio St.
NEW YORK CITY . . . . . 267 Fifth Ave.

Other offices in Cleveland, Detroit, Houston, San Francisco and Glendale, Calif.

Better Gas Cooking Service for years to come...

BECAUSE OF WHAT'S HAPPENING HERE TODAY!



HERE'S where IDEAS of today are turned into Porcelain and Steel for Tomorrow's Magic Chef Ranges. Climaxing years of pioneering in gas industry research, this new home for the American Stove Research Laboratory and offices is opened in St. Louis.

MODERN CONSTRUCTION

With gleaming porcelain-enamel and glass-brick exterior . . . practical, efficient interior, this building is symbolic of the sturdy beauty of Magic Chef Ranges. Light, spacious, with glass-brick partitions, modern lighting and air conditioning, the Laboratory was planned by our engineers to provide the most efficient arrangement of offices, shops, and testing rooms, with greatest comfort for the staff.

SCIENTIFIC TESTING

Here new ranges are designed, experimental models built . . . our own Machine Shop making trial parts. The Gas Analysis Laboratory performs experiments, and the Test Kitchen approves new models before they are placed in production.

The American Stove Research Laboratory has been largely responsible for the high quality and performance of Magic Chef Ranges and other American Stove products. Now with expanded facilities this Laboratory is equipped to contribute still further to the forward march of the gas industry.

AMERICAN STOVE COMPANY

BOSTON NEW YORK PHILADELPHIA
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"I Like THE Pacific LINE"

Twenty-six years of manufacturing gas heating and ventilating equipment is a factor... but more than that is the satisfaction customers express after they have bought and used PACIFIC. ☆ Another thing ...PACIFIC is the most complete line of gas heating equipment manufactured in the West. Quality features such as PACIFIC Multi-Tubular Burner and completely welded, leak-proof heating element assure the user years of economical and satisfactory service... backed by a firm with over a quarter century reputation for fair dealing.

BE SPECIFIC...SAY PACIFIC

These A.G.A. approved units are recommended by leading engineers, architects and builders: Gas Circulating Heaters, Wall Heaters, Floor Furnaces, Gas Steam Radiators, Gravity and Blower Furnaces, Forced-Air Units, Overhead Units, Duct Furnaces, Blowers and Water Heaters.

Pacific
GAS RADIATOR CO.
1740 West Washington Blvd.
LOS ANGELES, CALIF.

Gas Conditions N.B.C. Studio

(Continued from Page 29)

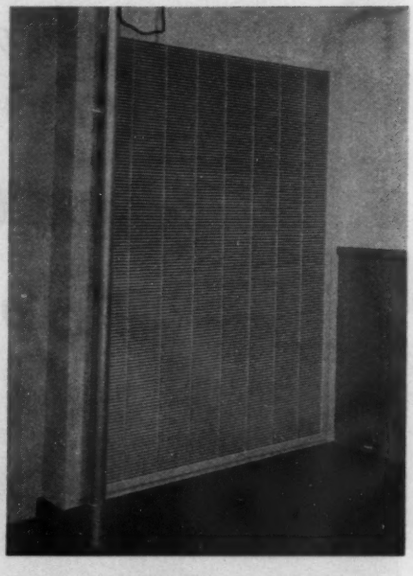
The exterior of the entire plant is painted a blue-green, which color was selected to reduce the glare of the bright California sun. Roofs of the studios resemble flat domes and are painted with aluminum to reduce heat absorption and thereby increase air conditioning efficiency. Aviators say that these aluminum roofs can be seen for miles and are a new landmark for flyers.

The auditorium studios each seat 340 persons. Two of them have a program platform of 3000 sq. ft. each, and are said to be the biggest in the world built for radio. "Mike rattle," extraneous sound caused by echoes, is eliminated by breaking the walls into V'd surfaces. The rear wall and one-fifth of the side walls are of perforated board over thick layers of rock wool, which acts as a sound absorber. The seats are upholstered with special material to absorb the same amount of sound per seat when the studio is empty that one person would absorb by occupying a seat during a broadcast. This enables technicians to insure constant acoustical values for rehearsal and non-audience programs.

Each of the four studios has its own lobby. Visitors may watch rehearsals through sound-proofed glass panels in the lobby, and a special clients' room overlooking the stage is provided for sponsors and their representatives.

The engineering equipment is the latest product of the R.C.A. laboratories. Among its features are a pre-set switching system, which is a robot supervisor, automatically changing broadcasting channels from one studio to another to make sure there will be no error and possible interruption of a program for the listening public. The old system involved split second accuracy on the part of two or three men who had only 15 seconds to effect channel changes. The robot system enables one man to switch the channel in advance, and simply push a single button when the time comes for a program change.

With the completion of this imposing new studio, Hollywood, already headquarters of the motion picture world, moves a step closer to central



Behind this grilling in the NBC studio is a huge air-conditioning duct. Eighty-five thousand gallons of water are used to maintain the air at 72° F. The air is changed eight times an hour, and humidity is scientifically controlled.

position in the radio industry. Sunset boulevard, once a street of motion picture studios, begins to assume the aspect of "radio row." Only a block away from Hollywood Radio City, on the site of the old Christie Studios, where bathing beauties once disported, stands the shining new Columbia Square, Hollywood headquarters of the Columbia Broadcasting System. Other new studios are scattered up and down the street.

■ ■

Court Favors Texas Cities Co. in Rate Case Decision

The United States Fifth Circuit Court of Appeals, New Orleans, has granted the Texas Cities Gas Co. of Dallas, Texas, protection against the enforcement of an ordinance passed by the City of El Paso to reduce gas rates to 50 cents per 1000 cu. ft. The Court held that the ordinance was not lawfully assed and could not be lawfully enforced.

■ ■

R. I. Snyder Transferred

R. I. Snyder, formerly detail supervisor of the appliance testing laboratory of the Southern California Gas Co., Los Angeles, has been transferred to the company's personnel department. C. A. Thorp will fill the post vacated by Mr. Snyder. Guy Corfield, research engineer, retains general supervision of the laboratory.

General Gas Pipe Line Corp. Proposes Kentucky-Indiana Carrier

THE Federal Power Commission has received an application by the General Gas Pipe Line Corp., Indianapolis, Ind., for a certificate of public convenience and necessity authorizing the construction, operation and maintenance of a proposed 20-in. natural gas pipe line approximately 180 miles in length for the purpose of transporting natural gas from gas fields in Kentucky for sale to industrial concerns and public utilities along the proposed line, which will terminate in Indiana. The applicant also proposes to construct approximately 40 miles of 3-, 4-, 6- and 8-in. field gathering lines.

The application states that a War Department permit has been obtained for the construction of a double pipe line crossing under the Ohio River near Louisville, Ky., and that the operation of the proposed project will require one 2,400 hp. compressor station.

Officers of the newly-formed company are: Albert Kalo, president and chairman of the board of directors, Indianapolis, Ind.; Elmer E. Boone, vice-president and assistant general manager, Whiteland, Ind.; Ethyle Fahrson, secretary, Indianapolis, Ind.; Chelsea C. Boone, treasurer, Elkhart, Ind.; Irene Kalo, assistant treasurer, Indianapolis, Ind.

■ ■

Southern California Gas Co. Completes New Modernistic Branch Office

The new Lincoln Heights branch office, completed in December by Southern California Gas Co. at 2522 Daly street, Los Angeles, was opened for its first day's business on January 3, 1939. In addition to a department for the transaction of regular business, generous space is devoted to the display of modern gas appliances, and a trained home appliance counselor will be on hand to advise customers in the purchase of gas equipment.

The exterior architectural treatment is modernistic, a combination of glazed terra cotta and metal producing two tones of brown. A broad display window takes up a major portion of the front. At night a neon sign will be illuminated across the upper front and the display window will be brilliantly lighted with concealed lights.

The building is heated in the winter by a forced air gas furnace, and will be cooled in the summer months by an air circulating system.

The company is also planning the construction of a $100,000 distribution department building and auditorium in San Bernardino. William P. Hand is manager of the San Bernardino division.

■ ■

San Diego Consolidated Gas Co. Opens Oceanside District Office

A new district office at Oceanside, Calif., has been formally opened by the San Diego (Calif.) Consolidated Gas and Electric Co. The Oceanside branch, managed by A. R. Whisler, serves the entire section along the Southern California coast south to Del Mar and east to Rancho Santa Fe.

The new building was designed by Frank Hope, San Digeo architect, and construction was supervised by W. A. Jones of the utility's own construction department. The building formerly used will be retained as headquarters of the electric and gas service units and for the storage of merchandise and operating materials.

■ ■

Southern California Meter Association Plans Annual Hi Jinks for February

The regular meeting of the Southern California Meter Association was held in Huntington Park, Calif., on January 26, with Harry A. Faull, president, conducting the meeting. Speakers were Thos. P. Phelan, assistant secretary and director of public relations of the Los Angeles Stock Exchange, and M. E. Bell, maintenance engineer for the Los Angeles Brewing Co.

The Association's annual Hi-Jinks will be held Saturday, February 25 at the Los Angeles Elks' Club. An attendance of several hundred is expected, according to Gordon Greene, entertainment chairman.

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BUTANE-PROPANE *News*

Butane Will Play a Major Role In Building the Shasta Dam

By H. W. WICKSTROM
Consulting Engineer

ONE of the outstanding features in the 1938 butane calendar was the decision of Pacific Constructors, Inc., to use butane on the Shasta Dam job. The Shasta Dam is located on the Sacramento River near Redding, Calif., and is comparable in size with Boulder Dam, Grand Coulee, Bonneville, and projects of like magnitude. This job is one of the largest construction projects in the country, and will take five years to finish with an estimated fuel consumption of over one million gals. per year.

H. W. WICKSTROM

Contract for construction of the dam was awarded by the U. S. Department of Interior to Pacific Constructors, Inc., a firm made up of 14 large general contractors who banded together to submit the bid due to the size of the project.

Frank Crowe, who was superintendent of construction at Boulder Dam, is in charge of the work for the contractors. The responsibility for the selection of butane utilization equipment and installations has been placed in the hands of his assistants, Bert Goodenough and Larry Sowles, both of whom have had many years of experience on major construction projects.

The contract for furnishing all fuel for the life of the job was awarded to the Tide Water Associated Oil Co., who are represented on the job by I. Koppel and Harold Clark.

To take care of the fuel deliveries for the job, which amount to the usage of a good-sized town, the Tide Water Associated Oil Co. built a complete distributing plant adjacent to the contractors' shops. This plant has facilities for storing and loading gasoline, Diesel oil and butane. The butane facilities consist of two 10,000-gal., 125-lb. per sq. in. working pressure A.P.I.-A.S.M.E. code tanks mounted horizontally on concrete foundations with space provided for two additional tanks of the same size.

The plant is located in an area at the bottom of a canyon, which allows the incoming tank trucks to gravitate their load through a 3-in. line into the tanks if it is desired. By using a pump which is manifolded to be used either as an unloading pump or dispensing pump,

AT LEFT: View of one of the butane tank trucks used for filling equipment. Note the meter and the guard. AT RIGHT: One of the huge dump trucks on the Shasta Dam project being fueled with butane.

a 6000-gal. truck and trailer of butane can be unloaded in a little over an hour's time. The tanks are manifolded together with 3-in. lines and piped to the pump junction.

The pump, a four-stage Byron-Jackson Vertical Hydro-Press unit is driven by a 5-hp., 440-volt direct connected motor, and has a capacity of 50 gals. per minute against a 75 lb. differential pressure.

All-Welded Pipe

All pipe is of welded construction with steel flanges, and lubricated plug cocks are used throughout. A loading island is provided to fill either contractors' equipment or the oil companies' tank truck. The loading island is a 5 x 15 ft. concrete slab with a frame cover and meters for gasoline, Diesel oil and butane.

The butane hook-up consists of a vapor separator, strainer, meter, differential back pressure regulator, combination starting switch and shut-off valve, hose and hose nozzle. To operate the filling equipment the hose nozzle is connected to the tank to be filled. The attendant then raises a weighted lever which first closes the vapor-proof switch, which starts the motor on the pump. By lifting further, the attendant opens the shut-off valve in the butane line. This allows the pressure of the butane from the pump to act upon the meter and upon the lower side of the diaphram of the differential regulator. The upper side of the diaphram of the differential regulator is connected to the vapor space in the storage tanks through the return line from the vapor separator. When the pressure on the discharge side of the meter is 15 lbs. higher than the vapor pressure in the storage tank the differential regulator valve opens, allowing flow of liquid through the meter into the container to be filled. The use of this device prevents flash vaporization through the meter, and affords accurate measurement. When the container is full the attendant drops the lever which stops the pump and shuts the valve in the liquid line. The hose nozzle is then disconnected from the tank, and the fueling is complete.

Provision has been made on the loading island for an additional meter and operating valve so two pieces of equipment can be fueled at once. Rate of fueling is between 25 and 35 gals. per minute, depending upon the vapor pressure of the fuel in the container to be filled. The use of a centrifugal pump obviates the need for by-pass valves, and the weight operated lever control is a safety measure designed to cut off flow of liquid in case of a hose failure.

General view of the Tide Water Associated Oil Company's butane plant, built to fill the fuel requirements for the camp on the Shasta Dam project near Redding, California.

All of the butane facilities are designed and installed in strict accordance with the orders of the California Industrial Accident Commission, which was promulgated in 1933 by members of the Commission and engineers and representatives of the oil companies that were interested in the problem of safe handling of liquefied petroleum gases. The freedom from accidents in installations living up to these orders has well proved their usefulness and completeness, and their adoption has greatly benefited the industry in providing a workable and safe set of regulations.

To take care of delivery of butane to equipment that cannot be driven to the central plant for fueling, a 725-gal. tank truck is used. This tank is mounted on an International chassis, and is provided with a rotary pump and a meter set-up similar to that used on the loading island. The pump is driven by a power take-off and will develop 50 lbs. per sq. in. discharge pressure above the vapor pressure of the fuel in the tank. The tank is equipped with an internal valve which is spring closed, requiring the driver to hold it open during unloading operations. The meter and all valves and fittings are guarded by heavy steel guards to protect them from falling rocks, collision or turn over.

The tank truck was built by the Southwestern Engineering Co. of Los Angeles, Calif., and is of the most modern design for the service required.

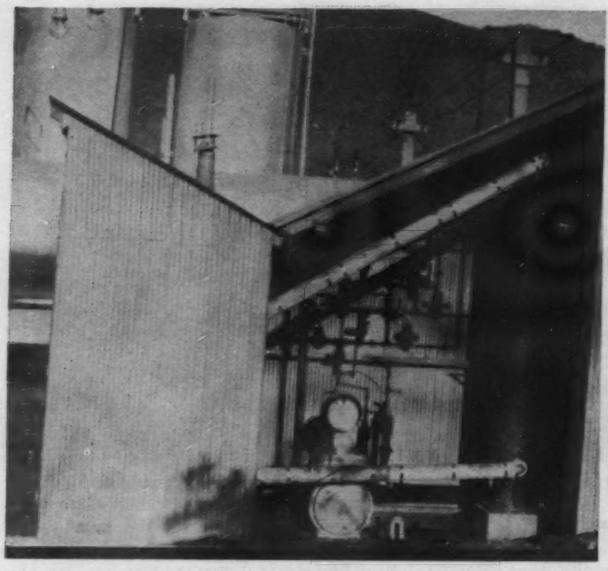
In addition to the liquid fuel dispensing equipment the plant is provided with a 3000 cu. ft. per hour vaporizing unit to provide gas for use in the camp. The vaporizor takes the liquid from the same storage tanks and changes it to gas at 12 in. of water pressure. This 3000 B.t.u. per ft. undiluted gas is piped to the camp in a 3-in. main with 1½- and 2-in. laterals to the points of consumption.

The vaporization is provided by a heat exchanger operating on hot water from an automatic hot water heater. The heat exchanger operates at tank pressure, and two stages of pressure reduction are provided on the vapor side to prevent freezing up of the regulators. The gas is metered through a master meter into the distribution system, and a recording pressure gage and a recording thermometer are provided to correct the measurements.

Automatic Design

The plant is designed to work automatically and is piped up with duplicate regulators and by-passes to allow work on any regulator without shutting down service to the mains. Failure of the vaporizing system is obviated by an auxiliary feed from the vapor space of the main storage tanks that will automatically provide gas until the trouble has been corrected.

Directly after the plant was ready for operation in October 1938, the first of 18 heavy duty dump trucks arrived



Close up view of heat exchanger, meter and regulators. Water heater is located in the corrugated iron building.

on the job. These trucks are White Model 991 equipped with 24 yard dump bodies and have a 150-hp. motor. The empty trucks weigh 40,000 lbs. and when loaded have a weight of 112,000 lbs. Their top speed is 14 miles per hour, and they are used to haul muck from the 5-yard shovels to the various dumps.

Truck Equipment

Each of these trucks is equipped with a 96-gal. butane fuel tank, and with a fuel consumption of 4 gals. per hour require fueling once a day. The trucks were shipped to the coast minus gasoline tanks and carburetor equipment. Ensign carburetors, regulators and heat exchangers and the butane fuel tanks were installed in the local shop of the White Co. before the equipment was delivered to the job.

The contract for furnishing butane equipment for 51 additional pieces of equipment ranging from pick-up trucks to truck cranes was awarded to the Ransome Co. of Emeryville, Calif. Tanks sufficiently large for a full day's fuel requirement, and Ensign carburetion equipment is being supplied, and the work of installation is under way in the Pacific Constructors shops on the job.

The use of butane fuel is contemplated in other equipment such as portable compressors, industrial locomotives and a possible 30 additional trucks that may be used on the job.

The fact that a peak of 5000 men will be employed on the job has required the Pacific Constructors to provide dormitories, mess hall, office building, hospital and other facilities to care for the needs of the employees. Rapid progress was made in construction of these facilities and by Thanksgiving Day, 1938, dormitories and mess hall were ready for use. Gas was turned into the mains on Wednesday before Thanksgiving and fuel was available for heating, hot water and cooking facilities. The heating system for the office and dormitories is part of an air conditioning system which provides cool air for the buildings in the summer and heat in the winter. Central heating units are provided at each building using Pacific Gas Radiator Duct Type heaters which are thermostatically controlled to provide an even temperature in the circulating air in the ducts. The high efficiency of the direct gas-fired duct heaters, and the safety of this type of unit influenced their selection. The heaters range from 225,000 B.t.u. per hour input for the smaller buildings to 338,000 B.t.u. per hour input for the larger buildings.

Water heating is provided for by Pacific Gas Radiator Type H Booster Heaters. One or more heaters are installed in each building tied into insulated storage tanks ranging to 500 gals. in capacity. Circulation in the hot water lines is provided for with small centrifugal pumps.

In addition to the low pressure distribution system a connection has been provided at the vaporizing unit to provide gas at 15 lbs. per sq. in. pressure for use in the contractors' shops for preheating, cutting and other uses requiring high pressure gas.

The equipment in use and that under order represents a fuel consuming ability of 200 to 250 gals. per hour which will require delivery of 4000 to 6000 gals. per day of butane to the job. The source of supply of the fuel is approximately 450 miles away, and it is transported to the job in truck and trailer equipment of 6500-gal. capacity. This will require the full time operation of one transport unit with the use of an additional one during the peak periods.

This job exemplifies the latent possibilities of butane as an all around fuel, capable of use for engine operation, domestic fuel and industrial fuel. The availability of butane in bulk delivery, and the development of utilization equipment to a point of dependability that equals that of other fuels, is significant not only to those in the business of dealing in these commodities, but also to the many prospective users.

The decision of Pacific Constructors to use butane was not the result of high pressure salesmanship, but a matter of engineering reasoning. The operating results obtained on previous jobs—Cajalco Dam, Imperial Dam, Boulder Dam Power Line, Mono Basin Tunnels, Los Angeles Acqueduct, Spokane United Railways and the numerous highway construction jobs that were the proving grounds from 1933 until now—were the deciding factors.

The liquefied petroleum gas industry can look forward to similar large installations in the near future, as the groundwork and pioneering has been completed, and all that is needed to expand the usage is intelligent presentation of the true facts to the potential users.

Stanley Jenks is Speaker at L.P.G.A. Eastern Meeting

The Eastern Section of the Liquefied Petroleum Gas Association, Inc., held a meeting January 25 at the Hotel Lincoln, New York City. Stanley Jenks, editor *GAS*, was the luncheon speaker, his subject being "The Industry and Its Future."

The meeting was held for the purpose of electing 1939 officers, to receive a report from the chairman and other sectional officers, to discuss plans for 1939 activities, and plan the next Sectional meeting.

New Butane Co. Formed

A company dealing in bulk gas systems and butane gas has recently been formed at Fremont, Neb., by Paul Schreiner and two others. Known as the Nebraska Butane Gas Co., the company has been installing underground tank systems.

L.P.G.A. Holds Conference In Okla. City, Feb. 20-21

THE Liquefied Petroleum Gas Association will hold its annual conference February 20-21 in Oklahoma City, Okla., according to Frank R. Fetherston, secretary-treasurer, L.P.G.A. Convention headquarters will be the Hotel Biltmore.

Some of the speakers on the program are: E. D. Graham, Oklahoma Corporation Commission; F. E. Fisher, Skelly Oil Co., Tulsa; Otto H. Kohl, president, Bupane Gas Co., Cedar Rapids, Iowa; S. W. Foran, Dallas; William C. Buttner, Bastian-Blessing Co., Chicago. In addition to the program the arrangements committee has planned a tour of the adjacent oil fields and an inspection trip through a near-by butane-propane recovery plant.

There will be a manufacturers' exhibit of appliances and equipment, limited to the products of those manufacturers who are members of L.P.G.A.

The southern and midwest sections of the L.P.G.A. are planning to hold meetings during the convention, and the committee on regulations will meet February 17-18 prior to the convention to formulate plans and policies in connection with revisions of the rules of the National Board of Fire Underwriters.

The officers of L.P.G.A. are W. F. Verkamp, president; E. L. Mills, first vice-president; M. E. McKay, second vice-president, and F. R. Fetherston, secretary and treasurer. George W. Bach, Kansas City, is chairman of the arrangements committee.

■ ■

Ranchogas Co., Sonora, Tex., Bought By J. Oberkampf

The Ranchogas Co., Sonora, Texas, has been purchased by Joe Oberkampf of Ozona, Texas, from its founders, E. D. Shurley and Clayton Puckett. The company serves liquefied petroleum gas to several West Texas towns, and has tank systems at Garden City, Sterling City, Eldorado, Rocksprings, Mertzon, Barnhart and Big Springs. Plants at Alpine, Marfa and other towns west of the Pecos were not included in the sale.

Mr. Oberkampf has stated that business will be conducted as before with no changes in personnel.

■ ■

Texas Butane Distributor Opens Branch Office

The Western Farm Gas and Appliance Co., of Wichita Falls, Texas, distributors of farm and ranch home butane gas plants, have opened a branch office in Vernon, Texas. H. Broyles, district sales manager of the company, will be office supervisor. Hot water heaters, gas ranges, and heaters and circulators will be on sale at the new office.

■ ■

Community Natural May Buy Gas System in Bangs, Texas

The citizens of Bangs, Texas, have recently voted approval of the sale of the bankrupt Interstate Public Service Co.'s natural gas distribution plant to the Community Natural Gas Co., Dallas, Texas. Bangs has about 300 meters which have been divided between the two companies.

Dewey Sutton, local manager of the Interstate utility, in a pre-election statement, urged approval of the sale.

■ ■

Tracy Drilling Corp. Receives California Gas Franchise

The Tracy Drilling Corp. has been granted a franchise by the board of supervisors of Solano County, Calif., to use the county roads for pipe line right-of-way, and gas from the corporation's wells in the Rio Vista field will soon be distributed to Solano county communities, according to Jason A. Loughridge, vice president of the corporation.

It is expected that two new industrial plants, both large natural gas consumers, would soon be erected near the Rio Vista field, further stated Mr. Loughridge.

■ ■

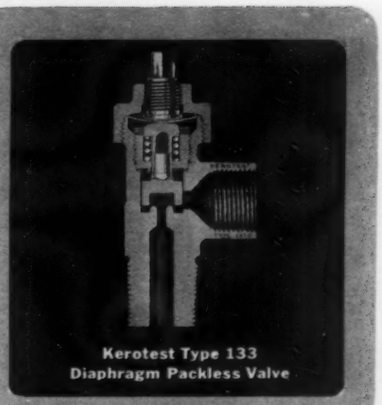
Waldo Hoaglund in New Post

Waldo Hoaglund, formerly employed by the Willmar (Minn.) Gas Co., has accepted a position as district manager in the bottle gas division of the Worthington (Minn.), Gas Co. He will have charge of four counties in Minnesota, making his headquarters at Pipestone.

■ ■

Canute Has Butane Service

A butane gas system which will serve business houses and residences has been installed at Canute, Okla. The system was put in by Huff Kelly.



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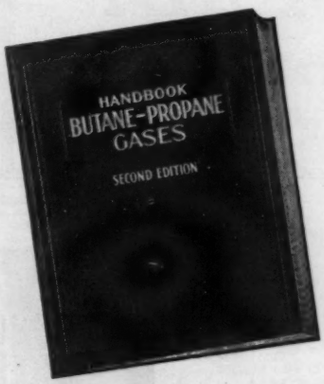

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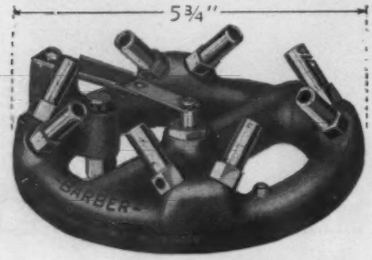

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New Lines Boost Supply To Oklahoma Towns

THE State Fuel Supply Co. has laid six miles of 6-in. welded gas pipe lines extending south from Wewoka, Okla., to connect with a new 4-in. line of the Southwest Gas Utilities Corp. of Ada, Okla. The new transmission lines enable the company to furnish a larger and more dependable supply of gas to Wewoka.

The new State Fuel Supply Co. line parallels an existing 4-in. line of that company and cost approximately $26,000. The Southwest Gas Utilities Corp. new line also parallels another 4-in. line of that company, connecting with its main line to Ada. The principal source of supply is the Yeager and Sasakwa, Okla., fields.

About 4,000 ft. of 3-in. welded gas line has been constructed by the State Fuel Supply Co., to tie in with two gas wells of the Ohio Oil Co., on the Lemon farm in the Cement (Okla.) field. This line transports field gas to the main 6-in. line of the company supplying Anadarko, Okla.

The State Fuel Supply Co. also is laying 1500 ft. of 4-in. distribution lines in the town of Cement, Okla., to furnish gas for drilling purposes in that vicinity.

■ ■

L. J. Mueller Holds 30th Annual Sales Conference

From coast to coast and border to Gulf Stream came branch managers and sales representatives of the L. J. Mueller Furnace Co., Milwaukee, Wis., to attend the 30th Annual Sales Conference of this company held at the Astor Hotel, Milwaukee, January 9 to 14. The sales conference was the first in several years and was attended by H. P. Mueller, president.

Some of the high spots of the conference were the announcements of a new stoker-fired furnace with an anti-fly ash feature, of a floor furnace of new and exclusive design, and of a complete line of pre-fabricated duct and fittings.

■ ■

L. P. G. A. Offers Prize for Association Emblem Design

The Liquefied Petroleum Gas Association has offered a prize of $25.00 to the person submitting the winning design for an Association emblem in a contest open to all employees of members of the Association. All designs entered in the contest must be forwarded either to the Association headquarters and be received not later than February 13, or forwarded to the Secretary, care of the Biltmore Hotel, Oklahoma City, Okla., and be received not later than February 20. The contest will be judged at the time of the annual meeting of the Association at Oklahoma City, February 20-21.

The following rules govern the contest: 1. Any employee of a member company may participate and submit as many designs as desired. 2. Any member company may submit as many designs as desired. Origin of the designs is immaterial. 3. Designs must be submitted on rigid mountings, not exceeding 8½ x 11 in. in size. 4. The judges will select the design most suitable as an Association emblem for use by members on stationery, advertising literature, etc. 5. All designs submitted in the contest become the property of the Association, whether selected as the prize winning design or not. 6. Designs will be judged for the idea expressed rather than for art work.

■ ■

P-K Gas Co. Installs Butane Systems in Texas Towns

Butane gas systems have recently been installed by the P-K Gas Distributing Co., Inc., Pampa, Texas, in Throckmorton, Matador, Olton, and Quail, Texas. The company has 12 distributing points in Texas, and according to Paul Kasishke, president, serves 750 customers.

■ ■

McNamara is New Owner of Pittsburg Water Heater Corp.

C. J. McNamara, general manager of the Pittsburg Water Heater Corp., has completed negotiations with the principal owners of the corporation to acquire 51 per cent of the holdings. The transaction was approved by the trustees and became effective January 1, 1939.

■ ■

Welding Conference to Meet at Norman, Okla., March 9-10

The first annual welding conference and short course, sponsored by the College of Engineering and the University Extension Division of the University of Oklahoma, will be held in the Engineering Building, Norman, Okla., March 9-10.

EXCLUSIVE design of Mueller Gas Era Furnace gives longest life---lowest operating cost.

L. J. MUELLER
FURNACE COMPANY
MILWAUKEE

PREVENT Hot Water Tank EXPLOSIONS

with KLIXON [Snap Opening Self - Closing] Relief Valves

Your surest protection against dangerous temperatures or pressures in domestic hot water tanks is a Klixon Relief Valve. Operated by a scientifically calibrated thermostatic disc, a Klixon Relief valve snaps, **instantly,** into **full** opening position, giving quick and positive protection against explosions. Available for pressure, temperature or both, Klixon Self-Closing Relief Valves are low in cost and easy to install. Write for new complete bulletin.

SPENCER THERMOSTAT CO., ATTLEBORO KLIXON MASSACHUSETTS

P.C.G.A. PREVIEW

COOPERATIVE LOAD-BUILDING

"THIS IS OUR FIRST **ARCHITECTURAL AD** OF THE NEW 1939 SERIES"

MODERN HOME . . . .

Natural setting ~ Natural gas

THAT this house, of advanced contemporary style, includes *gas* heating, *gas* cooking and *gas* water-heating almost goes without saying. ☆ Modern automatic gas heating is as much a part of today's planning as are functional design and liberal use of steel and glass. Hot water, automatically supplied, heads the list of necessities, and gas cookery is preferred by nine out of ten women. ☆ Thus, architect and client usually find themselves in complete accord on specifying "All Gas."

Residence of *Mr. and Mrs. Herwar Rudakiewicz*, Los Angeles. Designed for one-acre canyon lot by Architect *R. M. Schindler*. Automatic forced-air gas furnace. (Note built-in gas range in kitchen view at right.)

LET GAS DO THE 4 BIG JOBS

THE MODERN FUEL

HOUSE HEATING · WATER HEATING · COOKING · REFRIGERATION

P. C. G. A.
H. L. Farrar, President
Clifford Johnstone, Managing Dir.

FEBRUARY 1939

COMMITTEE
A. C. Joy, P. G. & E.
J. S. Spaulding, So. Calif. Gas Co.

Prevent pipe corrosion under all soil conditions

Because it remains in perfect contact with surfaces to be protected over a wide range of soil conditions, No-Ox-Id prevents under-film corrosion on your pipe lines.

No-Ox-Id may be applied under your own supervision in your own yards, at a central point, or on the line. There is a combination of No-Ox-Id and No-Ox-Idized Wrappers for hot or cold application. Write for full information.

DEARBORN CHEMICAL CO.
310 S. Michigan Ave., Chicago, Ill.

NO-OX-ID IRON RUST
The Original Rust Preventive

Los Angeles
807 Mateo St.
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421 Bryant St.
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Line up for profits in '39

FRASER
GAS HEATING EQUIPMENT

NEEDS NO BASEMENT
Fraser Cabinet furnace—fan and filter equipped—rapid delivery of heat—easy installation—get extra business with this unit!

ALSO—
- TUCK-A-WAY FURNACES
- BASEMENT FURNACES
- FLOOR AND WALL FURNACES
- CIRCULATING HEATERS
- FURNACE FANS AND FILTERS

IT PAYS YOU TO SELL AND INSTALL THIS SUPERIOR EQUIPMENT

MANUFACTURED BY
FRASER FURNACE CO.
STOCKTON, CALIFORNIA

DISTRIBUTORS
H. R. BASFORD COMPANY
425 Second St. San Francisco
911 S. Grand Ave. Los Angeles

Oklahoma Co. Installs New Boosting, Controlling Units

THE OKLAHOMA NATURAL GAS CO., Tulsa, Okla., is trying out new automatic gas pressure booster and temperature control devices on its low pressure natural gas distribution system, at El Reno, Okla.

At the city gate is placed a Fisher-King gas pressure booster, which automatically maintains a constant pressure at the low pressure point in the distribution system.

At six or seven division points on the El Reno distribution system, Fisher temperature controls have been placed. An out-of-doors thermometer acts on a bellows which in turn acts on a diaphram of a small pilot regulator. This works on the regulator itself increasing or decreasing gas pressure according to atmospheric conditions.

A small clock device, which is not sensitive to atmospheric conditions, is set at night when load demands are not so heavy, holding the pressure in each district to whatever maximum standard is desired.

■ ■

E. A. Johnson, Pittsburgh Equitable Executive, Dies

Edward A. Johnson, vice-president of the Pittsburgh Equitable Meter Co., died at his home in Bellevue, Pa., a suburb of Pittsburgh, Thursday evening, December 15, at the age of 58. A native of New York City, where he had been associated with the Watson Stillman Co. and later as New York district manager for Duff-Norton Manufacturing Co., Mr. Johnson came to Pittsburgh in 1911 as general sales manager for Duff-Norton Manufacturing Co. In 1929 Mr. Johnson joined the Pittsburgh Equitable Meter Co. and was well known throughout the gas and meter industries of the country.

■ ■

Oglebay, Conway Elected To Indiana Co. Posts

At a meeting of the board of directors of the Public Service Co. of Indiana, Indianapolis, G. J. Oglebay of Indianapolis, who recently was elected a vice-president, also was named to the board of directors.

The election also was announced of Earl H. Conway of Indianapolis as assistant comptroller. Mr. Conway has been associated with the company since November, 1937. The board accepted the resignation of C. D. Porter as vice-president and director.

■ ■

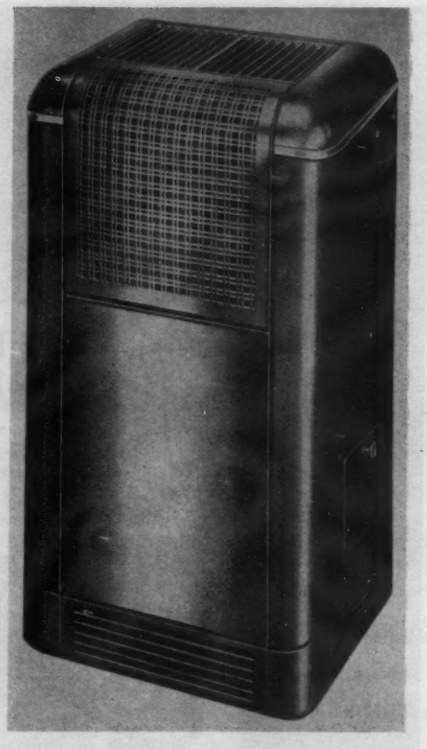
Corpus Christi Seeks To Expand Gas Service

The city council of Corpus Christi, Texas, has authorized Mayor A. C. McCaughan to make application to the Works Progress Administration for $43,638 to be used for extending the gas distribution system in that town. The city would supply $39,432, making the total estimated cost of the project $83,070.

■ ■

Emmett R. King Dies

Emmett R. King, comptroller of the Metropolitan Edison Co. of Reading, Pa., and the New Jersey Light and Power Co. of the Associated Gas and Electric System, died January 8 following a heart attack while playing golf at a Reading club. He was 54.



Howle Co. Space Heaters Given A.G.A. Approval

THE HOWLE CO. of Chicago, parent company of Condensation Engineering Co., has received A.G.A. Testing Laboratory approval of its A30, A45 and A60 vented circulator type gas space heaters which have been introduced to the gas heating market.

The inner unit of the heater combines large heating surface with delayed flue travel making possible maximum heat. The units are crimped and sealed by a patented process insuring gas tight construction. Porcelain coating inside and out gives protection against rust and corrosive action even in salt air areas such as seacoast towns.

The heaters have a new two-way automatic draft control and three-way heat distribution. They also feature the patented Condensation Eliminator of the company, finished with acid resisting porcelain.

The automatic air intake on the new patented gas burner requires no air adjustment for any kind of gas.

In addition to the Testing Laboratory Seal of Approval, the heaters have received high rating with the laboratories of The Peoples Gas Light & Coke Co. of Chicago. The heaters will be sold to utilities by the Howle Co. of which E. O. Howle is president. Dealer distribution is being handled by Cole Hot Blast Manufacturing Co., Chicago.

■ ■

Construct Texas Gas Line

The Houston (Texas) Oil Co. has started construction of a 12¾-in. gas pipe line from the Spanish Camp gas field in Wharton County, Texas, to its main line between Hungerford and Wharton. The Houston company recently acquired approximately 4000 acres in this territory, on which there are six producing gas wells.

Preview of coming campaigns by

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

GAS APPLIANCE SOCIETY OF NORTHERN CALIFORNIA

February
Final Month on Gas Heating

THIS month the industry's 1938-39 gas heating campaign reaches its grand climax. With three hundred 24-sheet posterboards, nine hundred truck signs and THREE BIG NEWSPAPER ADVERTISEMENTS, all following on several months of sustained build-up, we expect to develop hundreds of likely prospects.

This is your opportunity! By preparing local copy and publishing it along side of ours, you can secure the attention-value of two complimentary advertisements—and yours being the most specific as to price, make, etc., is sure to attract the majority of buyers.

Watch your mail for proofs of our February ads, and once you get them, lose no time in preparing tie-ins.

G

DEALERS: By watching this page from month to month you can keep informed of sales promotional campaigns to be sponsored by the Pacific Gas and Electric Company and the Gas Appliance Society. Detailed information will be supplied, as usual, through the mail. If such information is not received, call our local office or write Gas Appliance Society, 1355 Market Street, San Francisco, California.

Oklahoma Natural Installs Spun Glass Line Filters

At a cost of $5,000 the Oklahoma Natural Gas Co., Tulsa, has installed on its Oklahoma City natural gas lines system spun glass main line filters for the purpose of clearing the gas of dust, well sand, rust particles or other foreign substances.

Two of these filters were installed during the second week of January at the south station, Reno and Tenth streets, and at the station at Reno and Portland. These devices replace older oil bath scrubbers.

The gas enters the filter from beneath, rises through a layer of dry spun glass about 8 in. thick, in a drum 20 in. in diameter, and comes out at the top into the lines cleaned of deleterious foreign substances.

■ ■

Hafer Succeeds Williams In West Texas Co. Post

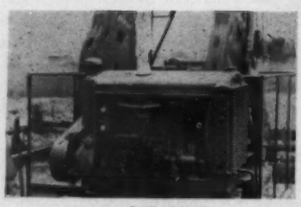
Jess Williams, manager for several years of the West Texas Gas Co. at O'Donnell, Texas, resigned recently to enter business for himself. C. L. Hafer from the company's Tahoka office will succeed Mr. Williams as manager. Headquarters of the West Texas Gas Co. are at Lubbock, Texas.

Famous the world over for Quality and Efficiency

ENSIGN NATURAL GAS AND BUTANE-PROPANE Carburetion Equipment

ENSIGN Natural Gas Carburetion Equipment has proved its superior quality and efficiency in the Oil and Gas industry for years.

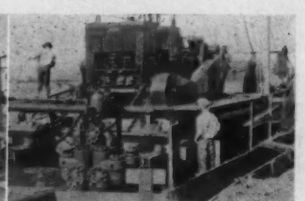
The superiority of ENSIGN Equipment for the carburetion of Butane-Propane fuels (a comparatively recent development) is just as pronounced.



PUMPING

For oil well drilling, servicing, pumping and transportation, be sure your engine units are ENSIGN-equipped!

TRANSPORTATION



DRILLING

ENSIGN CARBURETOR CO., LTD.
LOS ANGELES • DALLAS • CHICAGO

For UNCOMMON QUALITY in Valves, Fittings, Pipe and Piping Accessories specify Crane-Equipment. Backed by 80 years of manufacturing experience.

CRANE VALVES • FITTINGS • PIPE PLUMBING • HEATING • PUMPS

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVE., CHICAGO

NATION-WIDE SERVICE THROUGH 134 BRANCHES AND MORE THAN 500 WHOLESALERS

Detroit-Michigan Co. Holds Diamond Jubilee Convention

More than 50 members of the sales organization from all parts of the country and members of the executive staff were present at the annual convention of the Detroit-Michigan Stove Co. held in Detroit during six days beginning December 15. The theme of the convention was the company's coming Diamond Jubilee celebration signalizing 75 years of stove manufacture.

William T. Barbour, chairman of the board, sounded the keynote not only of the convention, but of the company's activities through the coming year in his address of welcome. President John A. Fry presented an outline of the company's history.

An air of suspense and expectancy was maintained through the first few days of the convention, due to the fact that the company's new line of Detroit Jewel and Garland ranges for 1939 was kept behind the scenes until the third day of the convention. The presentation was made by John Pankow, director of sales.

The announcement of the company's participation in the New York World's Fair was greeted with applause. The enlarged advertising program for the coming year was outlined. Specific features of range design were discussed in detail.

■ ■

Multi-Seal Manufacturing Corp. Sold to E. M. Naylor

E. M. NAYLOR

E. M. Naylor, vice-president of Naylor Pipe Co., Chicago, has purchased recently the business conducted under the name of Multi-Seal Manufacturing Corp., also of Chicago. A new organization known as Multi-Seal Corp. has been organized by Mr. Naylor, which will carry on and expand the company's activities. The Multi-Seal Manufacturing Corp. were manufacturers of rivets and pipe connectors.

■ ■

Cincinnati Co. Completing Adjustments On Appliances

Adjustments on gas burners, made necessary by an increase in the heating energy of the gas, have been nearly completed in 100,000 Cincinnati, Ohio, homes by the Cincinnati Gas and Electric Co., according to a statement made by H. C. Blackwell, president of the company. The change is being made as a result of a new gas ordinance, which went into effect late in November, raising the B.t.u. of the gas from 800 to 930 during October to May, inclusive, and to 875 during June, July, August and September.

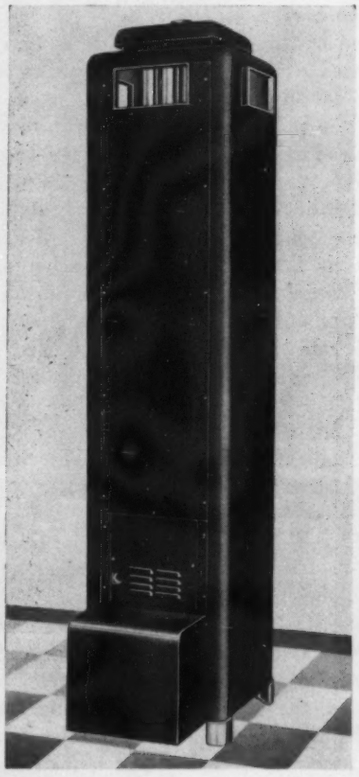
■ ■

Reliance Issues Bulletins

Reliance Regulator Corp. has just issued three new bulletins: No. 38-A on Type H regulators, No. 41-A on Type K regulators, and No. 48 on Type HPR regulators. Copies may be obtained by writing the company at 1000 Meridian Ave., Alhambra, Calif.

General Gas Light Offers Forced Air Heating Unit

General Gas Light Co., Kalamazoo, Mich., has introduced to the industry its new forced air heating unit called the Humphrey Heat Tower. Made in two models, the heater is used to heat several rooms by being placed in a closet with warm air ducts running to different points, or for open room heating.



Gas is burned by a forced combustion burner, and the heat directed to large diameter, heavy gage, vertical radiation tubes. A centrifugal type fan in the base of the heater draws cold air from the floor and forces it up and around the radiation tubes where the heat is absorbed. The warm air is then directed out into the room through openings at the top of the cabinet. The input rating is 75,000 B.t.u. per hour; the fan is a blower type, 860 r.p.m.; and the air delivery is 900 cu. ft. per minute at 1/10 in. static pressure.

■ ■

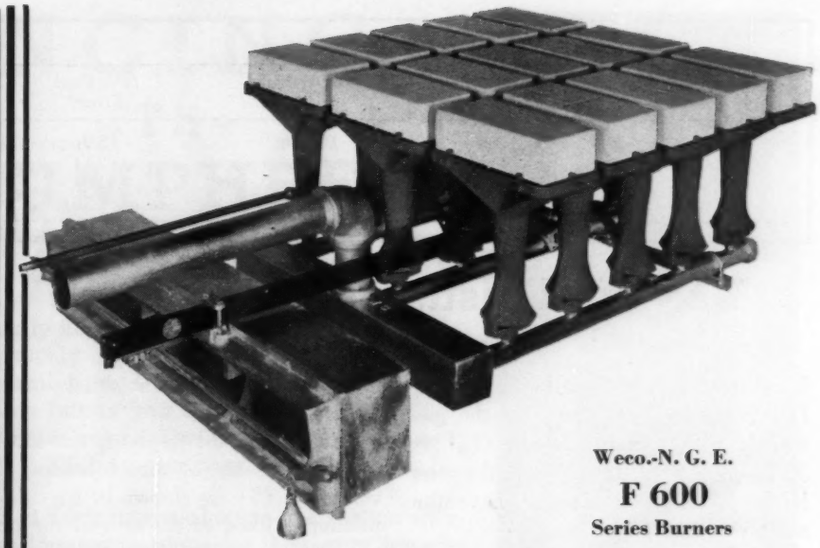
Minneapolis Co. Seeks Power To Build 1500-Mile Line

The Public Service Gas Co. of Minneapolis, Minn., has applied to the Federal Power Commission, Washington, D. C., for permission to build a 1500-mile pipe line from Montana and Wyoming natural gas fields through North Dakota and into South Dakota, Minnesota and Wisconsin.

■ ■

Briggs in A. B. Stove Post

Joe C. Briggs has been appointed southwestern representative for the A. B. Stove Co. of Battle Creek, Mich., according to an announcement by R. W. Lynn, sales manager of the company. Oklahoma City is Mr. Briggs' headquarters.



Weco.-N. G. E.
F 600
Series Burners

FOR:

Metal Firebox and Sectional Type Boilers

Produce EFFICIENT, SAFE and QUIET atmospheric conversions, because they offer greater capacity per unit at low pressures, perfect horizontal distribution, and one type of burner utilizes all gaseous fuels.

Write for Descriptive Bulletin

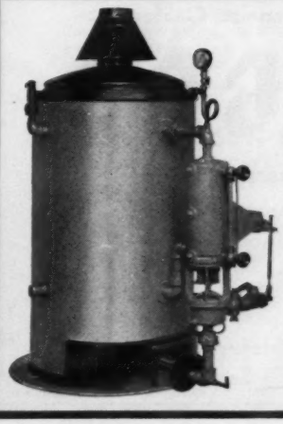
The WEBSTER ENGINEERING CO.

Tulsa, Oklahoma

Division of

SURFACE COMBUSTION CORP. TOLEDO, OHIO

F. J. Evans Engineering Co., Birmingham
Gas & Heating Specialty Co., Dallas Mechanical Equipment Co., Houston



INDUSTRIAL GAS BOILERS

Plain tubular	¾ to 10 H.P.
Water Leg tubular . .	5 to 45 H.P.
HE Flueless	1 to 18 H.P.

ASME Code for 100 lbs. S.W.P., also for higher pressures.
Non-electric Low Water Cut-offs for all types of boilers.

P. M. Lattner Mfg. Company
CEDAR RAPIDS IOWA

TABLE No. 1

Rate of Vibration	*Error in Piston Placement*	*Length of Whistle*	*(Per Cent Error)*
500	6.5 mm	16.6 cm	(3.9)
1000	1.75	8.3	(2.1)
1500	0.75	5.6	(1.3)
2000	0.4	4.2	(.95)

Use of Whistles on Gas Lines

(Continued from Page 18)

blown whistle with length (L_a), $N \times L_a \times \sqrt{1} = 8325$, and for the gas whistle with variable length (L_x) $N \times L_x \times \sqrt{S} = 8325$. When the tone is the same, both whistles have the same value of (N), then

$$\frac{N \times L_a \times \sqrt{1}}{N \times L_x \times \sqrt{S}} = \frac{8325}{8325} \text{ or } S = \left(\frac{L_a}{L_x}\right)^2$$

The value (L_a) is a constant in this case for the air blown whistle, (L_x) is the determinable and measurable length of the gas blown whistle, from which values, (S) can be calculated. The density varies as the square of the ratio of lengths.

The method for applying the aforementioned scale to direct reading of values of (S), is shown in Fig. 3: a pointer is fixed to the arm of the piston, which pointer moves across a scale calibrated in terms of gas density for identical pitch of both whistles. One can increase the motion of the piston by leverage and thus enlarge the scale. The piston may also be adjusted with a micrometer screw.

If the density of the gas is known, the foregoing method can be used for determining the percentage of said gas in a mixture with air (for example, the air-gas ratio for a Bunsen burner or a gas appliance, etc.). If for example, the density of the pure gas is 0.5, and the pitches match when S = 0.75, the mixture will consist of 50 per cent gas and 50 per cent air. In such cases, the scale can be calibrated directly in "Percent Gas in Air-Gas Mixture" (or air-gas ratio).

One may ask, is the difference in tone of the two whistles easily determined, or must one have a good musical ear? Furthermore, can the position of the pointer be sharply determined on the scale or is its range for a given pitch rather wide? When one brings two whistles in close proximity to the same tone, interference harmonics to which the ear is very sensitive are produced when the pitch of both tones is not exactly equal. For example, if the rate of vibration of one whistle is 1600, and the other 1550, the result will be a difference of 1600 — 1550 = 50, which will give the sound 50 periodically alternating waves. This pulsation in tone is easily noticeable, as long as a difference of 50 vibrations exists. These pulsations become longer as the tones approach each other, and fade entirely when the tones match exactly. The points where the tones do not match exactly, can therefore be easily determined by ear. One can improve the sensitivity by placing both whistles into the same box into which a hole has been cut and a lead pipe about 10 cm. diameter and three-fourths m. long inserted, placing the ear at the outer end of said pipe, and listening to the interference harmonics caused by the two whistles. The accuracy of the adjustment to identical pitch is thus improved.

The other question as to whether the position of the pointer can be accurately determined, can be more easily explained mathematically. The position of the pointer can be placed more accurately the higher the pitch. If, for example, an error of 20 vibrations is made in the tuning of the tones, the difference in the position of the piston to its correct position will vary as shown in Table No. 1.

TRANSLATOR'S NOTE: The position of the piston can be more accurately placed with the higher tones because small differences in pitch cause more frequent interference harmonics. Such an arrangement therefore operates most satisfactorily at the higher tones (n = 1600 to 1800). (See Figs. 1 and 2.)

If an open ended whistle is used instead of a closed one, (L) will be W/2 (instead of W/4 as with the closed whistle). The equa-

VITROLINER
THE PERMANENT CHIMNEY LINER
is coated inside and out with a special, high temperature, acid-resisting vitreous enamel. It prevents acid and destructive moisture from coming in contact with masonry and preserves chimneys way beyond their average life. Used by the largest utility companies in the United States and Canada.
Condensation Engineering Corporation
335 South Western Avenue, Chicago

GAS — 810 South Spring Street, Los Angeles, California

Yes! SEND ME GAS

for ☐ 1 Year at $1.00, ☐ 3 Years at $2.00

Other than United States, $2.00 per year

Name..... Position.....

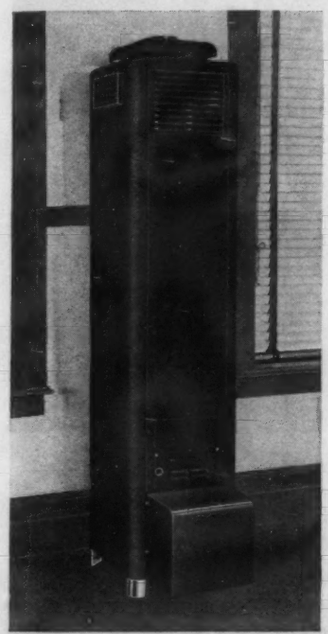
Company.....

Address.....

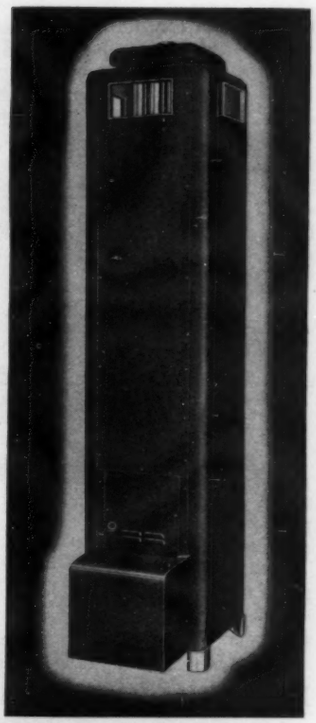
City..... State.....

☐ Check enclosed ☐ Send bill

ANNOUNCING..



The HUMPHREY HEAT TOWER



Beautifully finished to "fit" any office surroundings, or quickly adaptable for the complete heating of small homes, the new Humphrey Heat Tower now brings you great new opportunities for developing gas heating sales. It has an input rating of 75,000 B.t.u. per hour.

Shown at left is a typical office installation with deflecting louvers in place for three-way forced-air circulation. At the right, the Heat Tower is ready for installation in a small home, where ducts from the top openings will send heat in four directions. New literature gives you all the interesting details about this new development. Send for copies today.

GENERAL GAS LIGHT COMPANY

KALAMAZOO, MICHIGAN

23 Warren St., NEW YORK CITY 2nd Unit Santa Fe Bldg., DALLAS 475 Eleventh St., SAN FRANCISCO

For High Pressure Gas Services

G-450
PATENTED

Kitson G-450 Valve up to 125 lbs. per sq. inch pressure, affords the most effective connection between service, regulator and meter.

Positive in action and being *double-seated,* is gas tight under all conditions and adjustable to all pressures.

Easy to align—never binds, self-cleaning feature prevents clogging. Makes for low installation and minimum maintenance costs.

Immediate delivery in these sizes: ¾" x ¾" —1" x 1"—1¼" x ¾"—1¼" x 1"—2" x 2". Complete information and prices on request . . . No obligation.

KITSON

HIGH PRESSURE SERVICE GAS VALVE

MAIL THIS CONVENIENT COUPON

KITSON COMPANY
2409-15 WESTMORELAND STREET
PHILADELPHIA, PENNSYLVANIA

Trade K-CO Mark

● **Without obligation, *send me details and prices on the Kitson G-450 Valve.***

NAME..... TITLE.....

COMPANY.....

ADDRESS.....

G-2/39

tion for open ended whistles is $N \times L \times \sqrt{S} = 16{,}650$. The values of this equation for open ended whistles may be read from Fig. 1 and Fig. 2 by referring to the upper scale. With the open ended whistle made with telescoping or threaded tubes, the adjustment for exact pitch is more accurate than with the piston type whistle, because with a difference of 20 vibrations from the true pitch, the error in adjustment will be twice as great as with the closed whistle, for example at:

TABLE No. 2

Rate of Vibration	*Error in Adjustment*
500	13.0 mm
1000	3.5 mm
1500	1.5 mm
2000	0.8 mm

The reader should not gain the false impression that an auditory accuracy of only plus or minus 20 vibrations can be attained. The tones can be brought to the identical pitch without difficulty, which incidentally explains why the pointer can be read with greater accuracy at the higher tones.

■ ■

Illinois Well Sets Record

A new gas production record was set recently by Scott Gray No. 2 well in Lawrence County field, Ill., according to Joe Kesl, Jr., of Edwardsville, Ill. The well flowed 21,600,000 ft. in its first 24-hour test, and increased gas production of the field to approximately 140,000,000 ft. per day.

Northern Natural Extends Service to Lake Mills, Iowa

Natural gas service has recently been extended to the town of Lake Mills, Iowa, by the Northern Natural Gas Co., Omaha, Neb. Ultimately there will be 300 meters served in Lake Mills, according to a statement made by Ray L. Harrison, superintendent of distribution. C. F. Fletcher is the local manager of the Peoples Natural Gas Co.

The gas is piped from the Texas Panhandle through lines extending to Minneapolis, Minn. Approximately 145 towns in Kansas, Nebraska, South Dakota, Iowa and Minnesota are served from these lines.

■ ■

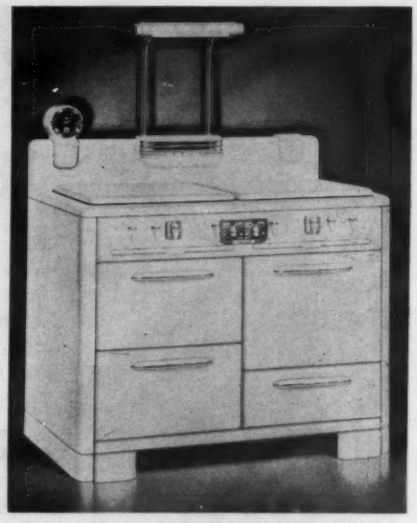
Detroit-Michigan Stove Co. Names Pankow to Okla. Post

John C. Pankow, director of sales, Detroit-Michigan Stove Co., Detroit, Mich., has announced the appointment of Ammon Jones as district manager for the company in the state of Oklahoma. Mr. Jones has been associated with the Wichita, Kan., sales office of Gas Service Co. for the past 12 years. He has taken up residence in Tulsa where headquarters will be maintained.

■ ■

Jack Slaven Transferred

Jack Slaven, for the past two years in charge of gas sales and service for the Citizens Utilities Co., Nogales, Ariz., has been transferred to the La Junta, Colo., branch of the utility.



"The Arlington," a Geo. D. Roper Corp. C. P. Model.

Roper Announces Complete 1939 Promotional Program

Built around C.P., the George D. Roper Corp., Rockford, Ill., has announced its 1939 sales promotional program for utilities and dealers with a complete portfolio and catalog. The portfolio describes such available promotional aids as descriptive folders, bill inserts, attention-getting floor and window backgrounds, outdoor weather-proof signs, satin banners for indoor display, flasher signs, handle display boards, price tags and billboard posters. There are also suggested local newspaper advertisements ready to run to tie in with the national advertising, movie slides, cook books attractively printed in two colors, the cooperation of a kitchen planning expert, a plan book of campaign suggestions and utensil sets available for premiums.

The multi-colored catalog "B" is a complete education in modern gas range design, construction and sales promotion. It covers the extensive Roper line from the de luxe C.P. models to the combination gas range kitchen heaters and hotel and restaurant heavy duty gas ranges.

Watt E. Derwent, vice president, the George D. Roper Corp., predicts that 1939 will be the biggest year in Roper history.

■ ■

New 10-Mile Line to Bring Gas to Edna, Kansas

A 10-mile gas line is being constructed by the Ruth Fuel Co., a subsidiary of the Burlingame Corp., Oswego, Kan., from the Wackerle gas field southeast of Edna, Kan., to Oswego. The American Gas Co., Galena, has been serving this city with gas piped through a high line running at the city's edge. It is expected that the securing of gas from a local source will enable the company to reduce its rates.

■ ■

Sapulpa Co. Will Discontinue

The Sapulpa Gas Co., serving Sapulpa, Okla, will discontinue service at midnight, February 28, as the result of an order by Federal Judge Franklin E. Kennamer.

MUELLER GAS DISTRIBUTION EQUIPMENT

The time-tested Mueller line includes Mueller Evenflow Service Regulators, Gas Stops, Service Stops, Stove Stops, Drilling and Tapping Machines, service boxes, meter trims and similar equipment. Write for description and prices.

MUELLER CO., Los Angeles, Calif.

Factories: Decatur, Ill.; Chattanooga, Tenn.; Los Angeles, Calif.; Sarnia, Ont.
Branches: New York and San Francisco

BASO

THERMO ELECTRIC SAFETY CONTROL FOR GAS BURNING APPLIANCES

BOILERS ★ FURNACES ★ CONV. BURNERS ★ SPACE HEATERS ★ UNIT HEATERS ★ AIR CONDITIONERS OVENS ★ RANGES ★ WATER HEATERS, ETC.

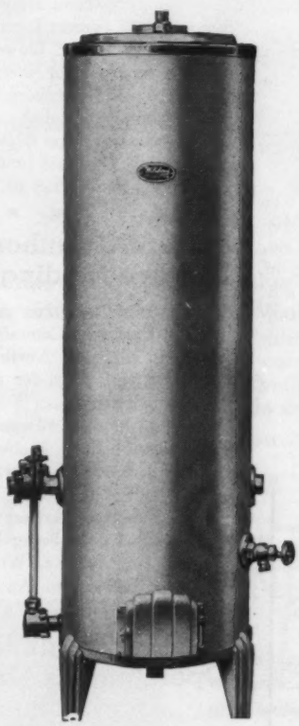
MILWAUKEE GAS SPECIALTY CO.
MILWAUKEE ★ WISCONSIN

GAS VALVE SERIES 500

ELECTRIC SWITCH SERIES 600

WELSBACH HOTZONE GAS WATER HEATERS

Made in Many Types and Sizes . . . Will Enable You to Offer Modern Hot Water Service to All Homes.



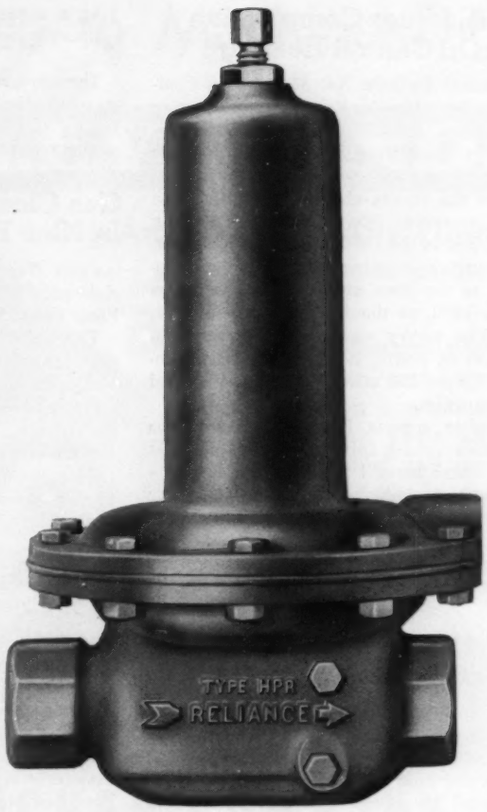
They have established a reputation for

CUSTOMER APPEAL
SAFETY FEATURES
QUIETNESS *(Luminous Flame)*
LOW OPERATING COST
LONG TANK LIFE
MINIMUM SERVICE

Write for Particulars

Welsbach COMPANY
Gloucester City, N. J.

BRANCHES IN CHICAGO AND SAN FRANCISCO



Stepping a Thousand Pounds Down to Two and a Half

Reliance "H. P. R." High Pressure Regulators safely and accurately handle inlet pressures up to 1000 pounds per square inch. Outlet pressures may be varied from 2½ to 200 pounds by the use of the proper model and its corresponding spring.

Used as a primary Regulator for reducing high transmission pressures before they enter the service system, this Regulator enables the service regulator to function more efficiently.

"H. P. R." Regulators are recommended for use on farm taps, for general use in gasoline plant and refinery installations and for controlling high pressure wells. Four models are available as pressure reducing regulators and back pressure regulators or relief valves.

SEND FOR BULLETIN No. 48

RELIANCE REGULATOR CORPORATION
1000 MERIDIAN AVENUE ALHAMBRA, CALIFORNIA

RELIANCE

A.G.A. Issues Comparative Data On Central Heating

Statistical Bulletin No. 34, entitled *Comparative Data On Gas-Fired Central Heating Installations, 1938-1937*, has been issued recently by Paul Ryan, chief statistician for the American Gas Association. The bulletin presents the results obtained from the 11th annual survey of gas central space heating installations in the United States and Canada, comparing the number of installations connected to the lines of some 268 companies July 1, 1938, to the number as of July 1, 1937. The survey was confined entirely to the types of central heating installations reported by the 268 manufactured and natural gas companies.

Complete reports from 108 natural gas companies serving approximately 35 per cent of the total natural gas customers in the United States indicate that during the year ending July 1, 1938, these companies sold 24,495,929,000 cu. ft. of gas for central house heating, an increase of 16.2 per cent over the previous 12 months.

■ ■

Louisiana Co. Seeks Power To Extend Gas Service

The Louisiana-Nevada Transit Co. has applied to the Federal Power Commission at Washington, D. C., for authority to construct an 8⅝ in. pipe line for the transportation of natural gas from the Cotton Valley field in Webster Parish, La., to the plant of the Ideal Cement Co., in Okay, Howard County, Ark., a distance of approximately 75 miles. Estimated cost of the proposed line is $356,000.

The applicant has entered into a contract to supply the Ideal Cement Co. with natural gas for 10 years, beginning in August, 1939, at the rate of 10¢ per thousand cu. ft.

■ ■

Gas Cleaners Described In New Fluor Bulletin

Fluor Gas Cleaners is the title of a new eight-page bulletin in color published by The Fluor Corp., Ltd., Los Angeles.

The bulletin describes the improved new type gas cleaners designed and built by the company. Considerable space is devoted to technical descriptions and illustrations of two gas cleaners, the liquid remover type and the dirt remover type.

Bulletins may be obtained free by writing The Fluor Corp., Ltd., P. O. Box 128, Arcade Station, Los Angeles, Calif.

■ ■

H. P. Childs, Pipe Line Co. Vice-President, Succumbs

Harold P. Childs, vice-president of the Missouri-Kansas Pipe Line Co., New York City, died December 27, 1938, at the home of friends in New York. He was 57 years old.

Before joining the Missouri-Kansas company, Mr. Childs had been associated with eastern utility companies, and had been vice-president of Servel, Inc. He was a member of the American Legion, having served as a major in the Engineering Corps.

"Zoneair" Air Conditioner Distributed By Payne Co.

Payne Furnace and Supply Co., Inc., Beverly Hills, Calif., announces distribution of its new Zoneair unit, a compact winter air conditioner that heats, circulates, cleans, ventilates and humidifies. Units may be used singly or in batteries of two or more, each furnace operating independently and servicing separate rooms or suites at the temperature desired.

All moving parts of the new Zoneair unit are mounted on rubber, and the draft diverter is completely enclosed within the casing. The unit is equipped with G. E. motors, an oversize fan for air delivery through the unit, and polarized and low voltage connections. Time-o-matic control automatically starts the blower at the correct furnace heat. The heating element, blower, blower motor and filter may be removed for servicing. The unit is enclosed in a streamlined, sapphire blue and black krinkle enameled casing, and is available in six sizes, from 60,000 to 200,000 B.t.u. input rating. Optional luminous flame burner guarantees combustion of manufactured gas.

■ ■

Seek SEC Authority To Dissolve Holding Company

Application has been made to the Securities and Exchange Commission by The North American Co., and North American Edison Co., New York City, for permission to eliminate North American Edison Co. as an intermediate holding company. When the proposed plan has been completed, the North American Edison Co. will have been dissolved, and The North American Co. will have taken over its gas utility subsidiaries, the principal ones being Wisconsin Gas and Electric Co., Racine, Wis., and Wisconsin-Michigan Power Co., Appleton, Wis.

■ ■

Pittsburgh Utilities Now Operating As One Company

A consolidation of the Columbia Natural Gas Co., Pittsburgh, Pa., and the Peoples Natural Gas Co., also of Pittsburgh, took place December 31, 1938. Before the merger, the Columbia company served about 24,000 customers, and the Peoples company about 130,000.

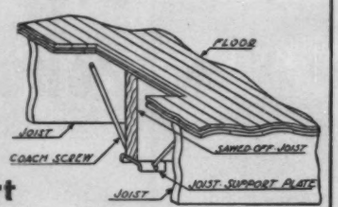
There will be no change in rates, and the officers of the merged companies will remain the same. They are: J. French Robinson, president; S. C. Preston, vice-president, and S. J. Ratcliffe, treasurer.

■ ■

Community Natural Extends Service to Lake View

Natural gas will be served this month to Lake View community, a suburb of San Angelo, Texas, by the Community Natural Gas Co., Dallas, Texas. The gas is to be supplied from the regular distribution system for the city of San Angelo through recently laid main lines approximately 12,000 ft. in total length. According to E. L. Buelow, district manager of the company at San Angelo, about 60 customers will be served. The Lake View school system is one of the major customers.

SOLVED Floor Furnace Installation Problems



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Adjustable Joist Support

- Eliminates tricky header construction for sawed joists.
- Provides strong, rigid reinforcement. No sagging, creaky floors.
- Easy to install. Saves time and money. Makes a better job.
- New low price, $2 per set. Less 50% to trade. Liberal quantity discounts.
- Specify Inland Adjustable Joist Support for your next floor furnace job.

Write for Details Today

INLAND MFG. CO. 1120 NORTH CICERO AVE. CHICAGO, ILL.

JOHNSON NO. 300 FURNACE SAVES FUEL ON ALL LOW AND MEDIUM FUSION METAL MELTING

Here is the most efficient, durable and economical type melting furnace made for lead, babbitt, type metal, solder, and all other low or medium-fusion metals and alloys. Equipped with three Patented Johnson Direct Jet Bunsen Burners, that develop intense heat with substantial fuel-savings on all kinds of natural, manufactured or bottled gas. Removable cast iron pot holds 150 lbs. metal, has removable lid. Wide range of other models to meet every metal-melting need.

Write for free Johnson catalog immediately.

JOHNSON GAS APPLIANCE CO. Cedar Rapids IOWA

You Have the Best Chance to Machine Dig with CLEVELANDS

Dig Anywhere . . . Any Time . . .

Every foot of trench that is machine-dug means money saved.

"Cleveland's" distinctive compactness, flexibility and ease of transportation applied to the trenching jobs assure maximum savings on the highest percentage of your work.

Furthermore, "Clevelands" have the speed, ruggedness and dependability that can only come from correct design and supreme quality construction.

They *DO MORE!* — That's why "Clevelands" *Save You More Money.*

Let us demonstrate "Cleveland's" value on your own jobs without obligation. Write today for details.

THE CLEVELAND TRENCHER COMPANY

"Pioneer of the Small Trencher"

20100 St. Clair Avenue — Cleveland, Ohio

Pipe Installed—Pavement Not Disturbed

AND TRAFFIC WENT ON AS USUAL

The photograph to the left shows a Greenlee Hydraulic Pipe Pusher being used to push pipe under a newly paved street, which is part of National Highway 20. Had it been necessary to install the pipe by trenching, it would have been an expensive job, not to mention the damage to the pavement and the inconvenience to traffic.

GREENLEE *Hydraulic* PIPE PUSHER

Let us send complete information on this money-saving tool. No obligation, of course.

When a Greenlee Hydraulic Pipe Pusher is available, there need be no thought of tearing up streets or lawns. All that is necessary is a trench long enough to take the pusher with a section of pipe, and one man can stand in a comfortable position and send pipe where it is wanted, simply by pumping the levers.

Here is a tool that is easy to take to the job and simple to set up and operate. It has capacity for 4-inch or smaller pipe and will develop a pressure of 40,000 pounds against the pipe clamp. Since it operates on a notched steel base, the pipe clamp is reset only when the end of the base is reached.

GREENLEE TOOL CO., 1700 Columbia Ave., ROCKFORD, ILLINOIS

2,500,000 Angelenos View So. Calif. Sign Monthly

SOUTHERN CALIFORNIA GAS CO.'s head office building stands at 810 South Flower Street, Los Angeles, set back from West Eighth Street by the width of one lot. Built originally in abutment with a church which was later demolished, the north wall of the building presents a blank face to West Eighth Street up to the level of the third floor. This expanse has been utilized by the company advertising department during the last two years for a series of powerful gas messages, and advertising executives both in and out of the organization agree that the location is extremely effective—perhaps, from a gas company standpoint, the most effective one in the city.

Very close to 2,500,000 people, it is conservatively estimated, cross the intersection of Eighth and Flower streets in daylight hours over a 30-day period. Daily daylight traffic is set at 7600 pedestrians and 28,600 autoists on Flower Street, and 6900 pedestrians, 28,600 autoists, and 16,500 bus passengers along West Eighth. This intersection, thus, is one of the busier downtown locations, Eighth Street being a major east-west artery and Flower Street serving as an important north-south cross-town through boulevard.

The clear lot in front of the sign, together with near eye-level position, gives it a very high visibility rating.

It is estimated that 2,500,000 persons each month pass within the influence of the huge "natural gas" sign posted on the side of the Southern California Gas Company's home office.

The fact that it is on the gas company's own building, too, is very appropriate, and adds to potency of the advertising copy. Although it is unilluminated, the sign is quite visible at night due to fairly intense street lighting at this point.

The area of the sign is 30 by 107 ft. Copy has been changed at six months intervals. The last two signs carried a modern gas range message, while the one preceding advertised gas as a clean, quick, economical fuel.

■ ■

M. M. Oliver, Once Manager of Philadelphia Co., Dies

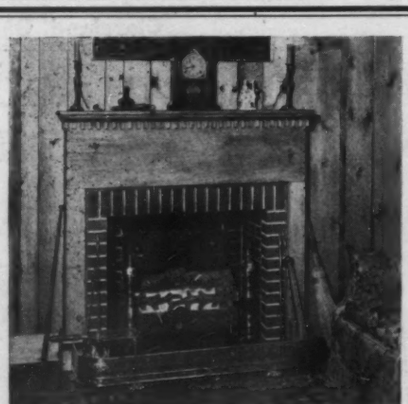
Francis M. Milward Oliver, 51, former vice-president and general manager of The Philadelphia Gas Works Co., died of pneumonia December 28 at Reno, Nev. He resigned as vice-president and general manager of the company in 1933, having served as vice-president since 1929. Prior to that time he was an officer of the Erie (Pa.) Lighting Co., and was for several years associated with Day and Zimmermann, Inc., a holding company for several utilities in various parts of the country.

■ ■

Natural Gas Cos. Merge

The Minnesota Northern Natural Gas Co., Rochester, Minn., has recently been consolidated with the Peoples Natural Gas Co., Omaha, Neb. The companies will operate under the name of Peoples Natural Gas Co.

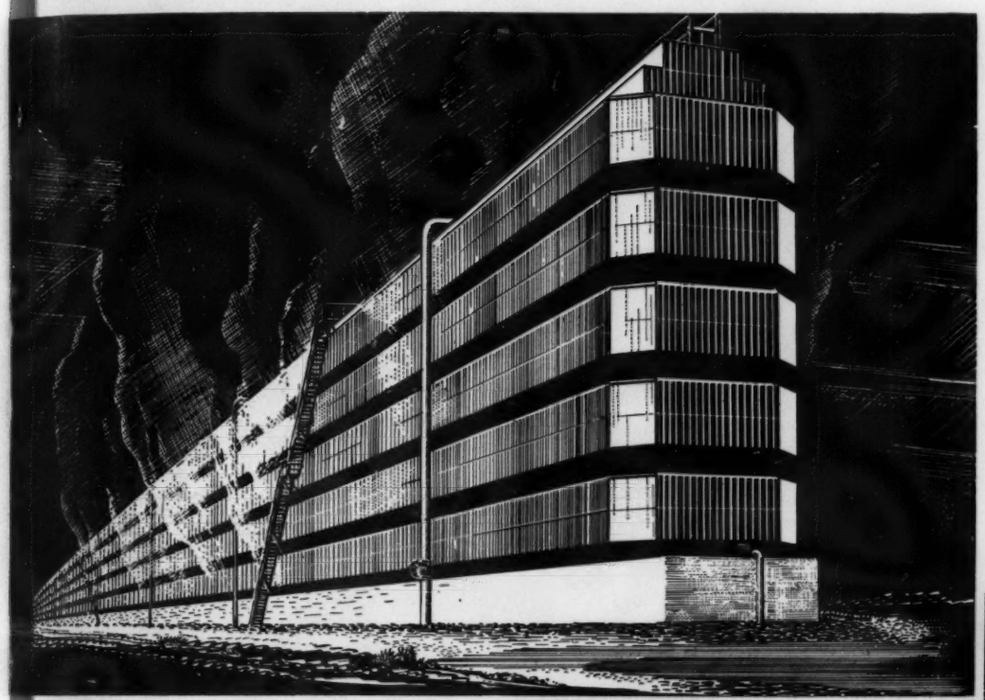
GEORGE A. BURRELL
Petroleum and Gas Engineer
Design—Construction—Reports
Suite 2900
50 Broadway, New York City
1936-42 5th Avenue, Pittsburgh, Pa.



Homestead "Woodfires" and "Coalfires"
are the most interesting type of Gas Fireplace Heaters to your customers.
They are Fires for Fireplaces—not just heating stoves.
Model pictured is the No. 08 Oak Woodfire used with the customer's Andirons and Fireplace Equipment.
THERE IS ALWAYS SPRING BUSINESS AVAILABLE
Homestead Heater Co., Inc.
Selvage St. Newark, N. J.

HEATS • VENTILATES • FILTERS • CIRCULATES • HUMIDIFIES
Race Gas FURNACES AIR CONDITIONERS
SIZES: 45,000 to 630,000 B.t.u. Input
Enter the air conditioning race with RACE. Increased customer good-will, minimum service requirements and profits the year round will make YOU —THE WINNER!
DISTRIBUTORS—DEALERS. Wire or Write for Territories, Discounts, Details.
ROYAL AIR CONDITIONING EQUIPMENT CO.
1900 N. ALAMEDA BLVD. COMPTON, CALIFORNIA

...*benefit* by FLUOR'S complete water cooling equipment service



The newly combined forces of two successful pioneer designers and manufacturers solicit your water cooling equipment business. Jointly they can satisfy your requirements from the standpoint of efficient cooling, of construction economy, water economy, space economy, long life and good appearance. Be sure with Fluor—from plan to plant. Obtain the valuable benefits of their *undivided responsibility service policy*, at no extra cost. Send for literature today.

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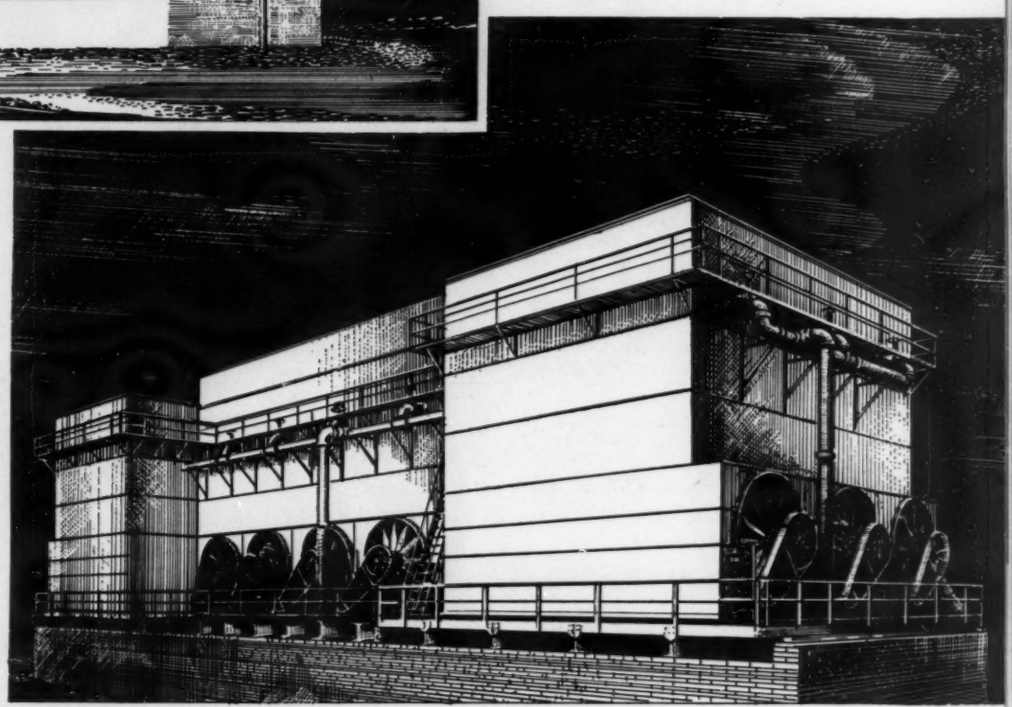
In the view below, the largest Forced Draft Cooling Tower ever constructed is in service in one of the nation's finest breweries.

The Fluor Atmospheric Cooling Tower, above, with its patented aerators, built for oil refinery service, is the largest of its kind.



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Forced and Induced Draft
Mechanical Type Towers
Spracoolers
Spray Ponds

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